UNIVERSITY
OF MICHIGAN

JAN 22 1954

ENGINEERING
LIBRARY

JANUARY 16, 1954

Vol. 146 — No. 3

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING •

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

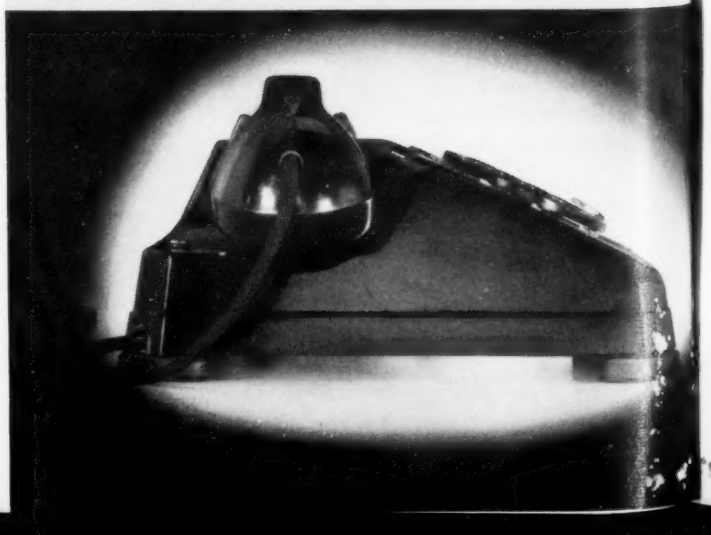
Published every week on Saturday by TELEPHONY PUBLISHING CORPORATION, 608 South Dearborn Street, Chicago 5, Illinois. Subscription $3.50 per year. Entered as second class matter at the Post Office at Chicago, Illinois, under the act of March 3, 1879.

Guaranteed Circulation This Issue

9949, of Which 9450 Is Paid

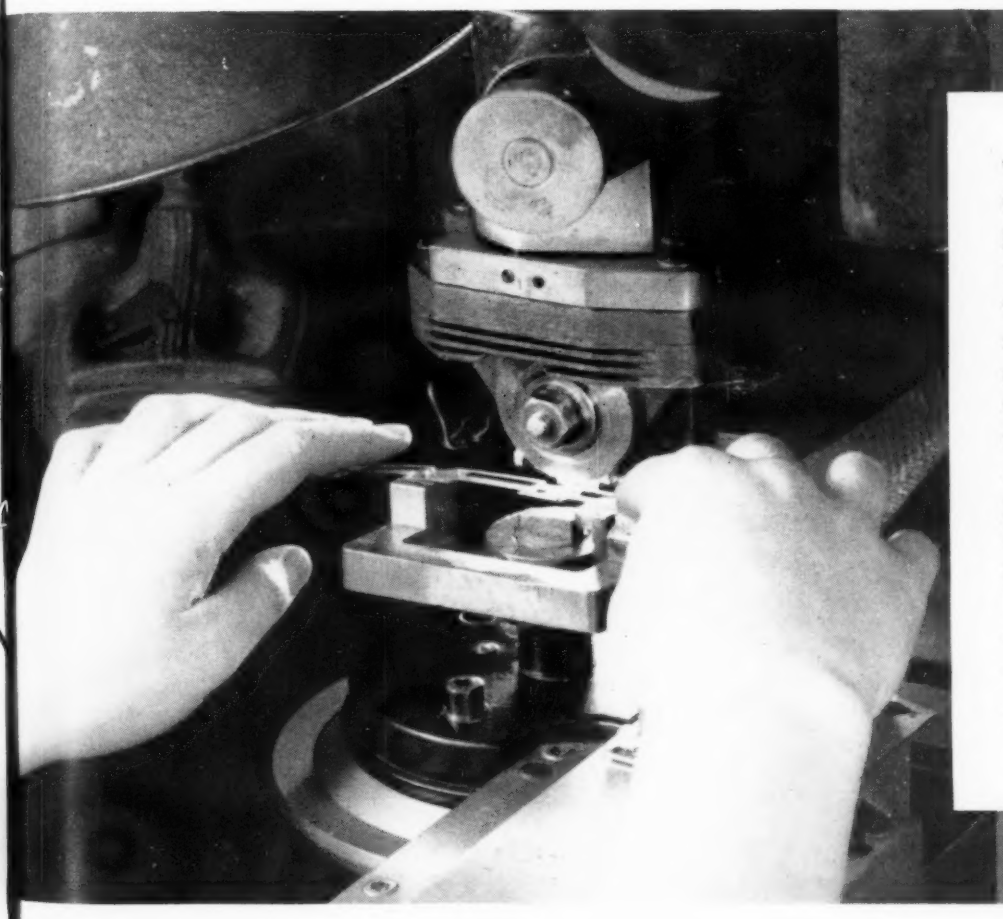
The new 1543

Handsomest profile since the "Arrow collar man"! The superbly harmonious lines of the 1543 telephone bring a new concept of functional beauty to home and office alike. The flexible nylon-braided cord enhances the lightness of the handset.



a "Treasure Chest"

of Precious Metal Contacts Welded with Consummate Care!



Welding Contacts for the Crossbar Switch

In this precision operation over 1800 contacts are accurately welded in an hour. Precious metal, used on each contact, makes the *Crossbar* connection radically different from most types of switching connections. A direct path is established simply by closing of these precious metal contacts. In the *Crossbar* Switch, connections are not made by brushes or wipers moving over a large number of terminals — resistance and noise is completely eliminated!

KELLOGG *Crossbar* is the complete answer to Independent Telephony's search for today's most modern dial switching equipment! Proved in use, its outstanding features provide the Independent Telephone Exchange with unmatched speed, capacity and economy. It not only meets all present needs . . . it also provides for tomorrow. Kellogg *Crossbar* grows with your requirements — from 100 (or less), to ten thousand lines!

Discover Its Value for Yourself!

Write for this free Kellogg Crossbar brochure today!

KELLOGG DIVISION OF IT&T

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

A Division of International Telephone and Telegraph Corporation

SALES OFFICES: 79 W. Monroe Street, Chicago 3, Illinois

FLASHES AND PLUGS

CHRISTMAS P.S. Santa Claus still lived in a little boy's heart the day after Christmas, but an Oklahoma City father had the jitters from the close call he got with Santa.

Eugene A. Mack was trimming his family tree and laying out presents for his sleeping children at 11:30 p. m. on Christmas Eve. When he started opening the presents for his son, Doug, 5, he found a box which should have contained a new electric train, was empty.

Mack's heart skipped a beat and his spirits did a nose dive. Doug was the only child whose belief in Santa Claus had to be protected. His daughter, Sharon, 9, had learned the cruel facts at school. Steve, 10 months old, was too young to have heard the Santa story.

Mack telephoned the police department. Records Clerk Kenneth Nash, after much checking, came up with the name of the president of a big downtown department store where Mack bought the train. Mack telephoned the store official who left a Christmas Eve party to call the store nightwatchman who opened the store to let Mack pick out a train.

Mack finally assembled the train under the family tree at 2 a. m., just a few hours ahead of the waking time for the children.

Mack told reporters on Dec. 26, "I never felt so much panic in my life—I just couldn't let that boy wake up Christmas morning without his train. Not when he was the only one who believed."

• • •

A THOUSAND TIMES NO. Sparky Roberts of Zanesville, O., wants it known he isn't buying old Christmas trees.

In fact, mention of a Christmas tree makes him shudder.

Sparky, who runs a barber shop in the Zane Hotel, has nothing against the spirit of Christmas but he's dead set against practical jokers.

Through no enterprise of his own, Sparky found himself involved, shortly after Jan. 1, in the most vexing business of his career.

One of his cronies, it seems, thought up the idea of installing Sparky as the buyer of cast-off Yule greenery. So the joker inserted an ad in the newspapers. It read like this:

"We Buy Old Christmas Trees. Phone 2-4755."

Roberts himself wasn't in on the gag, but this was the telephone number of his shop.

The tonsorial business took a frightful beating the first day the ad appeared, as Roberts spent the day answering telephone calls.

Some of the callers wanted to know if he would come for them or if they were to be delivered and, if so, where.

A reporter, curious about the ad, called the number and got a quick answer.

"Sure, we buy used trees," Roberts said. "Also any old firecrackers left over from the Fourth of July."

He added that he might be interested in the purchase of a tree "if you include tinsel, ornaments and light bulbs."

CIRCULATION

Guaranteed circulation of this issue is 9,949, of which 9,450, or 95 per cent, is paid.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

January 16, 1954

Contents

BUFFER PROTECTION ON OPEN WIRE JUNCTION WITH AERIAL OR UNDERGROUND CABLE 17
By J. A. McKinzie

THE PLANT MAN'S NOTEBOOK 21
By Ray Blain

ACCOUNTING FORUM 22
By C. R. Aagaard

CABARET AND KITCHEN 25

THE OPERATOR'S CORNER 26
By Mayme Workman

IN THE NATION'S CAPITAL 30
By Francis X. Welch

1954 CONVENTIONS 31

COURTS AND COMMISSIONS 32

LINCOLN (NEB.) T&T COMPLETES ITS TOLL DIALING INSTALLATION 36

NEWS ON NEW PRODUCTS 45

H. D. FARGO Jr., *President & Advertising Manager*
R. C. RENO, *Vice President & Editor*
H. D. FARGO, *Vice President & Treasurer*
A. J. STULTS, *Secretary & Western Manager*
DAN FARGO, *Managing Editor*
GEORGIA LEARNED, *Associate Editor*
RAY BLAIN, *Technical Editor*
FRANCIS X. WELCH, *Washington Editor*
MAYME WORKMAN, *Traffic Editor*
VIVIAN RYDEN, *Circulation Manager*

Published by
TELEPHONY PUBLISHING CORP.

Vol. 146, No. 3. Published every week on Saturday by TELEPHONY PUBLISHING CORPORATION, 608 South Dearborn St., Chicago (5), Ill. 20 cents per copy (except special issues). Subscription $3.50 per year U. S.; $4.50 Countries in U. S. Spanish Postal Zone; $4.50 Canada; $5.50 Other Countries. Entered as second class matter at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

Telephone WA bash 2-2435
608 S. Dearborn St., Chicago (5), Ill.

U. S. A.

BUFFER PROTECTION

on Open Wire at Junction with Aerial or Underground Cable

By J. A. McKINZIE, General Plant Superintendent, Lincoln (Neb.) Telephone & Telegraph Co.

EDITOR'S NOTE: *For some time it has been felt that there was need for an article describing the method of installing equipment to give added protection to cable at junctions with open-wire leads where such protection is required. Mr. McKinzie, an experienced telephone plant executive, was asked to prepare this article which should prove to be helpful to many Independent telephone companies.*

* * * *

SECTION 1
General

1.1 Purpose of Instructions and Subjects Covered

1.11 This section describes the method of installing equipment to provide additional protection for cable where required at junctions with open-wire leads (See *Fig. 1*).

1.12 Subjects covered in this section are as follows:

(a) Installing 83-A protector mountings and connecting ground wire and bridle wires.

(b) Installing multiple ground system and connecting ground wire.

(c) Maintenance of buffer protection installations.

1.2 Purpose of Buffer Protection

1.21 Buffer protection refers to the use of auxiliary protectors in an open-wire lead to provide additional protection to cable near the junction with the open-wire lead. This type of protection does not replace the standard protection employed at the junction, but, rather, complements it. The buffer protectors are intended only to by-pass the major part of the energy of a lightning surge, or current from a power line cross, to ground and allow the standard protectors to absorb the remaining energy. To be effective, the buffer protectors must be located in the open-wire line at least three span lengths away from the junction with the cable.

1.22 When more than two open-wire circuits require this type of protection, the installation consists of an 83-A protector mounting, equipped with No. 26 and No. 31-A protector blocks and mounted on a pole at not less than three spans or not more than one-half mile from the cable terminal on the junction pole. A No. 6 copper ground wire extends from the protector ground strip down the pole into a trench under the pole line to five ½ inch by 8 foot ground rods, spaced 15 feet apart.

1.23 In bracket leads or in single cross-arm leads where there are not more than two circuits to be equipped for buffer protection, Reliable Electric 1,000 type outside protectors, or comparable equipment made by other protection manufacturers, are used, one for each circuit. The protectors are equipped with No. 26 and No. 31-A protector blocks, but the fuses are omitted. Two ½ inch by 8 foot ground rods are placed 5 feet or more apart, for the multiple ground, and a No. 6 copper ground wire is used for connecting the protector ground strip to the rods.

J. A. McKINZIE

1.24 Since a low resistance ground is essential to the successful dissipation of the high-voltage discharge, the ground must be located in a definitely moist location. The ground rods are sunk to a *minimum* of 1 foot below the surface of the ground and the ground wire is buried at least 1 foot deep in the trench.

1.25 Because of the fact that a lightning discharge oscillates at a high frequency and has a steep wave front, any sharp bend in its path will offer a high impedance to its passage. In buffer protection, it is very important that there is the least possible interference to the passage of a lightning surge to ground; otherwise the discharge may travel in nearly its full strength to the junction of the open wires with the cable. All bends in the jumper wires and in the ground wire shall be made as gradual as possible. No spirals or sharp bends shall be permitted in these wires.

1.3 Limitations on the Use of Buffer Protection

1.31 The use of buffer protection is limited to certain locations specified in this subsection.

1.32 Buffer protection may be justified under the following conditions:

(a) Where important open-wire circuits, such as those for high grade toll, enter cable.

(b) Where rural exchange or trunk open-wire circuits enter cable, and the cable is frequently damaged by lightning going into the cable over the open wire.

(c) Where prolonged service interruption and expensive maintenance may result from lightning damage at junctions of cable with open wire because of the remote location of the exchange, even though this trouble occurs rather infrequently.

1.33 Buffer protection is not generally economical on two or four-wire farm lines unless these lines enter cable together with other circuits that require this type of protection under the conditions outlined in Paragraph 1.32. Buffer protection may also be justified for two or four-wire farm lines, if the conditions described in Paragraphs 1.32 (b) and (c) are encountered.

1.34 When circuits requiring buffer protection enter cable together with other circuits not ordinarily needing this type of protection, all these circuits must be protected in the same manner; otherwise there is the possibility that lightning or surges from power crosses may enter the cable over the unprotected circuits and cause damage.

1.35 In the case of important circuits that do not enter the cable with the exchange and trunk circuits, but are carried separately in open wire, *do not install buffer protection on these separate circuits.* Buffer protection may be used on the trunks and exchange circuits entering the cable, but not on the circuits that do not go into the cable. This precaution will prevent unnecessary trouble due to breakdown of protector blocks in protectors installed on the open-wire circuits not actually needing this protection.

1.4 Stepping Pole at Location of Buffer Protection

1.41 When buffer protection is to be installed on a pole, the pole will require stepping unless outside type station protectors are used as in two or four-wire circuits.

1.42 The stepping procedure is as follows:

(a) Place the detachable step on the road side of the pole, 26 inches above the ground.

(b) Place the wood step on the opposite (field) side of the pole 52 inches above the ground. If there is a fence (which may or may not be attached to the pole), this wood step must always be above the fence.

(c) Place the necessary key step and work steps for the protector mountings and then locate the remaining steps to properly stagger them not more than 24 inches between each step.

SECTION 2
Installing and Wiring Protector Mountings

2.1 General

2.11 In buffer protection installations, an 83-A protector mounting is used for each 10 wires or one crossarm of wires. Protector blocks of the No. 26 and No. 31-A type are required to provide the .010-inch gap needed for the proper functioning of the buffer arrangement. The No. 26 block is carbon while the No. 31-A block has a porcelain frame with carbon insert. The ends of the frame are colored yellow to distinguish this block from other types.

2.12 Use only the yellow No. 31-A blocks, not the blue No. 30 blocks with the No. 26 carbon blocks. The blue No. 30 blocks are intended only for use in pole protectors directly at the junction of the open wires with cable. Do not use more No. 31-A and No. 26 blocks than needed to equip the number of lines requiring buffer protection.

2.13 For jumpering the line wires to the protectors, use No. 14THC-2 wire for both toll lines and exchange circuits. This wire has low surface leakage, making the use of bridle wire insulators unnecessary on important toll circuits.

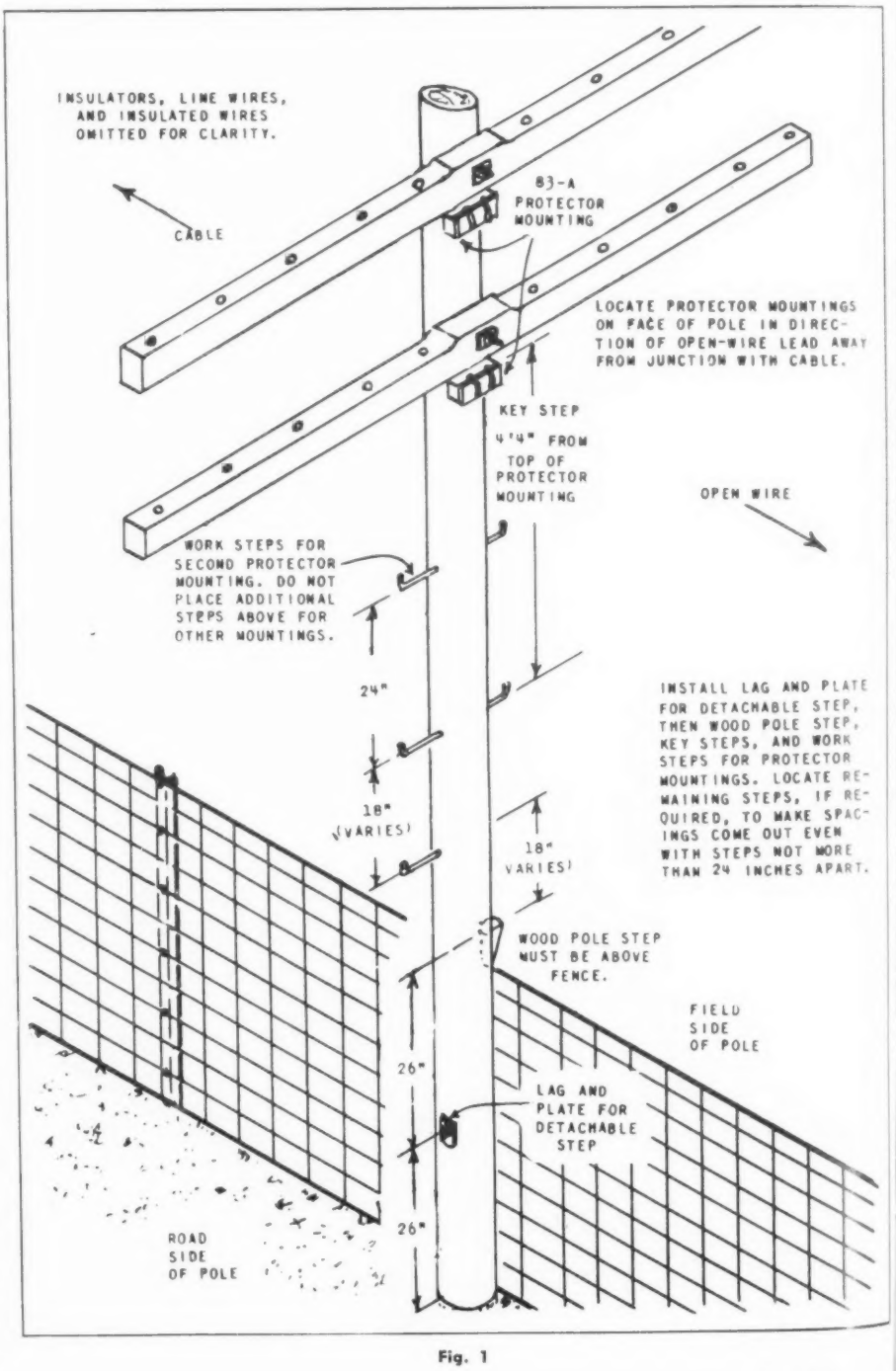

INSULATORS, LINE WIRES, AND INSULATED WIRES OMITTED FOR CLARITY.
CABLE
83-A PROTECTOR MOUNTING
LOCATE PROTECTOR MOUNTINGS ON FACE OF POLE IN DIRECTION OF OPEN-WIRE LEAD AWAY FROM JUNCTION WITH CABLE.
KEY STEP
4'4" FROM TOP OF PROTECTOR MOUNTING
OPEN WIRE
WORK STEPS FOR SECOND PROTECTOR MOUNTING. DO NOT PLACE ADDITIONAL STEPS ABOVE FOR OTHER MOUNTINGS.
24"
18" (VARIES)
18" (VARIES)
INSTALL LAG AND PLATE FOR DETACHABLE STEP, THEN WOOD POLE STEP, KEY STEPS, AND WORK STEPS FOR PROTECTOR MOUNTINGS. LOCATE REMAINING STEPS, IF REQUIRED, TO MAKE SPACINGS COME OUT EVEN WITH STEPS NOT MORE THAN 24 INCHES APART.
WOOD POLE STEP MUST BE ABOVE FENCE.
FIELD SIDE OF POLE
26"
LAG AND PLATE FOR DETACHABLE STEP
26"
ROAD SIDE OF POLE

Fig. 1

2.2 Installing 83-A Protector Mounting and Connecting Ground Wire

2.21 On the pole selected for the buffer protection installation, place the required number of 83-A protector mountings, as shown in *Fig. 2.*

2.22 Run a sufficient length of No. 6 triple braid WP solid wire to reach from the topmost protector to the last rod of the multiple ground system *without splicing.*

2.23 Remove the insulation from the ground wire and clean bare end thoroughly. Insert this end in the ground post and turn screw down firmly with a 216-B wrench.

2.24 Run the ground wire down the pole as directly as possible to the ground level, fastening the wire with galvanized guy staples.

2.25 When more than one 83-A protector mounting is placed, connect a tap wire from the ground post in each additional protector to the main ground wire, as shown in *Fig. 2.*

2.26 Place drive rings and bridle rings on the underside of the cross-arm, locating them so gradual bends can be formed in the No. 14THC-2 wires.

2.3 Connecting No. 14THC-2 Wire to Protector Terminals

2.31 Lay No. 14THC-2 wire in the drive rings from the line wires to the protector, as shown in *Fig. 3.* Leave sufficient wire for the connection at each end. At each turn in the run, make as gradual a bend as practicable.

2.32 At the protector mounting, remove the insulation from the wire ends and clean bare ends thoroughly. Pass the wires through the line holes in the bottom of the mounting, in the same order as their pin positions on the cross-arm (to facilitate trouble tests). Hook the bare ends around the terminals in the direction the nut tightens and turn down the nuts firmly with a 216-B wrench.

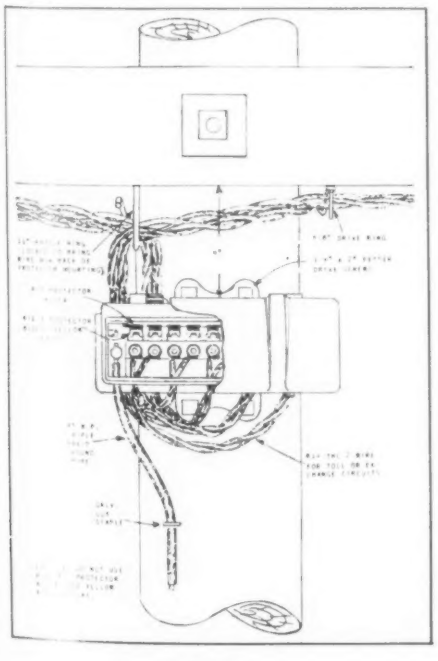


Fig. 3

2.33 Insert a D-15901 moisture shield over the protector strip. If the shield does not enter easily, loosen the strip mounting screws, push the mounting down as far as it will go and retighten the screws. Be sure the proper type of protector blocks have been placed before inserting the shield and closing the cover.

2.34 Wire the other protectors on the pole in the same way, if required.

2.4 Connecting No. 14THC-2 Wires to Line Wires

2.41 The method of connecting No. 14THC-2 wires to the line wires is shown in *Fig. 4.* Use T1-102 x 064D copper offset tap compression sleeves for tapping onto 104 and 128 copper and 109 galvanized steel line wires. Use the same type of standard compression tool to crimp the sleeves regardless of wire size.

2.42 Connect tap sleeve to No. 14THC-2 wire as follows:

(a) Crush the insulation on the wire-end between handles of diagonal cutters (back of hinge) to remove about 1¼ inches (three times width of pliers).

(b) Strip or trim off the insulation with diagonal cutters, taking care not to nick the bare wire. Draw the bare wire between partially opened blades of cutters to clean and brighten the bare wire. Leave about one-quarter inch uncleaned portion of the bare wire at the insulation end.

(c) Insert the bare wire in 064 end of the tap sleeve for full length of this end, leaving about one-eighth inch bare conductor between the wire insulation and the end of the sleeve. Pinch the sleeve slightly with lineman's pliers to hold the sleeve temporarily on the wire.

(d) Squeeze this end of the sleeve four times with compression tool, as shown in *Fig. 5.*

2.43 Connect the tap sleeve with No. 14THC-2 wire to the line wire, as follows:

(a) About 10 inches from the insulator in the direction of the open wire, clean and brighten a place on the line wire with a wire polisher (medium grit for copper wire or coarse grit for galvanized steel wire). Wipe cleaned portion of the wire with the back of the polisher to remove remaining dust.

(b) Wrap the sleeved end of the insulated wire once around the line wire, forming the insulated wire closely over the line wire to shape shown in *Fig. 4.* This will hold the wire in position and prevent flexing of the insulated wire

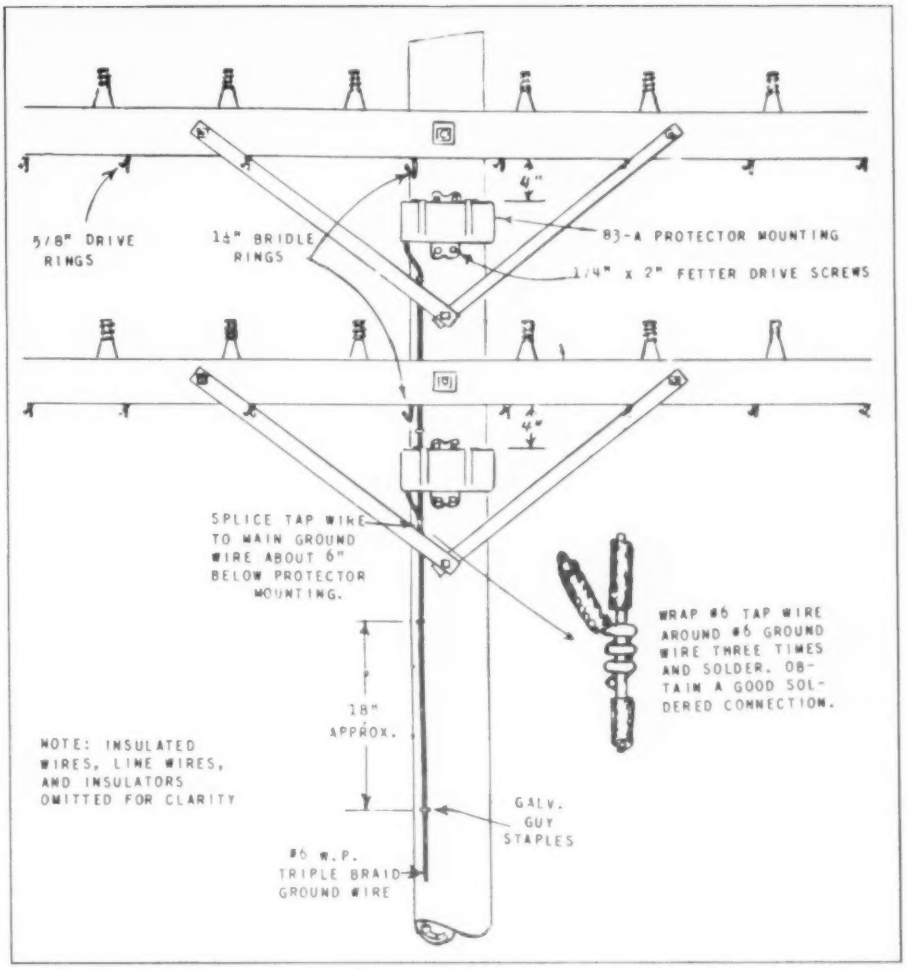

5/8" DRIVE RINGS
1¼" BRIDLE RINGS
4"
83-A PROTECTOR MOUNTING
1/4" x 2" FETTER DRIVE SCREWS
SPLICE TAP WIRE TO MAIN GROUND WIRE ABOUT 6" BELOW PROTECTOR MOUNTING.
WRAP #6 TAP WIRE AROUND #6 GROUND WIRE THREE TIMES AND SOLDER. OBTAIN A GOOD SOLDERED CONNECTION.
18" APPROX.
NOTE: INSULATED WIRES, LINE WIRES, AND INSULATORS OMITTED FOR CLARITY
GALV. GUY STAPLES
#6 W.P. TRIPLE BRAID GROUND WIRE

Fig. 2

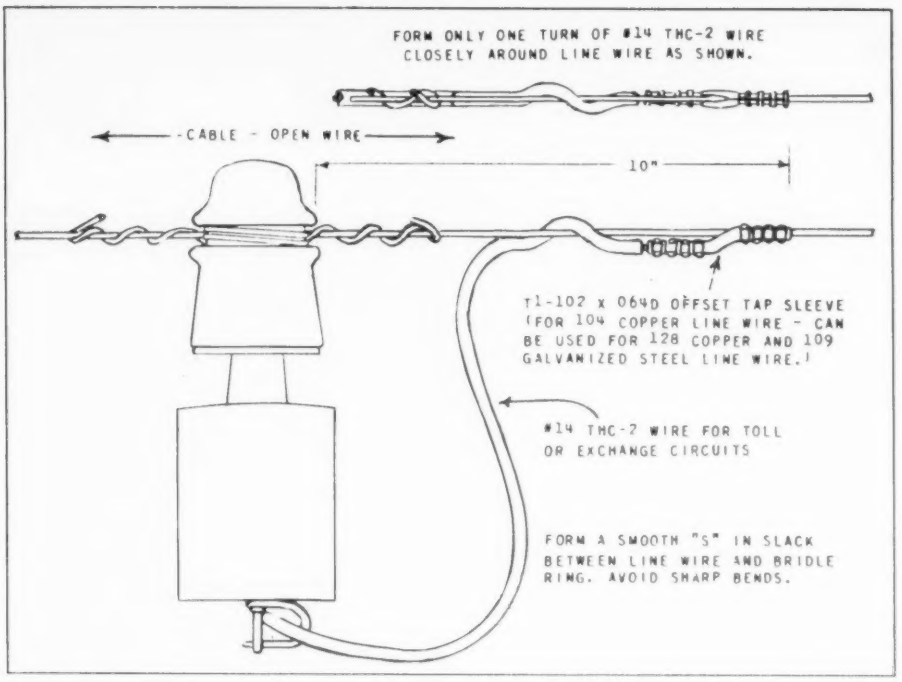

FORM ONLY ONE TURN OF #14 THC-2 WIRE CLOSELY AROUND LINE WIRE AS SHOWN.
CABLE - OPEN WIRE
10"
T1-102 x 064D OFFSET TAP SLEEVE (FOR 104 COPPER LINE WIRE - CAN BE USED FOR 128 COPPER AND 109 GALVANIZED STEEL LINE WIRE.)
#14 THC-2 WIRE FOR TOLL OR EXCHANGE CIRCUITS
FORM A SMOOTH "S" IN SLACK BETWEEN LINE WIRE AND BRIDLE RING. AVOID SHARP BENDS.

Fig. 4

at the sleeve when the line wire vibrates. Be sure to leave enough slack in the insulated wire to form a smooth "S" between the line wire and the bridle ring, as shown in *Fig. 4*.

(c) Bring the grooved portion of the tap sleeve in contact with the wire. Pinch the edges of the groove together with pliers to hold the sleeve temporarily on the wire. Then carefully positioning the compression tool as shown in *Fig. 6*, make four crimps in this end of the sleeve.

2.44 Reform the insulated wire, if

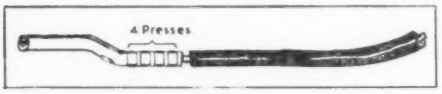


Fig. 5

necessary, to obtain the "S" shape and close fit of this wire on the line wire, as illustrated in *Fig. 4*. The "S" shape is intended to permit the slack portion of the insulated wire to flex with vibrations of the line wire without causing it to break off at the sleeve.

Section 3
Installing Multiple Ground System

3.1 General

3.11 Before installing buffer protection equipment, survey the topography of the right-of-way along the aerial lead to determine the best practicable location for the ground. Start the survey at the third pole from the junction pole and continue until one-half mile from the junction of the open wires with the cable.

3.12 Look for low places where water tends to accumulate and install the ground rods in line with the pole lead in a location where the soil is definitely moist much of the time. If there is a drainage ditch in the right-of-way, install the ground rods along the bottom of the ditch, rather than in the bank. Place the rods and the ground wire sufficiently deep in the soil to avoid the possibility of road grading machines striking the buried rods and wire.

3.2 Digging Trench

3.21 Beginning at the pole, dig a trench in the direction of the aerial wire lead. The exact direction does not matter as long as the trench is dug within the right-of-way for the pole lead and crosses the moist place selected.

3.22 Dig the trench to a minimum depth of 1 foot. Make the trench deep enough at the pole to accommodate the bend in the ground wire at this point.

3.3 Installing Ground Rods

3.31 At the locations indicated in *Fig. 7*, install ½ inch by 8 foot Copperweld ground rods. The method is as follows:

(a) Make a small hole in the desired location in the bottom of the trench. Pour water into the hole.

(b) Raise the ground rod to a vertical position and push the rod steadily into the hole until it will go no farther. Pull out the rod and allow water to flow into the hole. Again, insert the rod and force it farther into the ground. Lift up the rod and drive it back, using a pumping action to force the rod into the ground.

(c) Rotate the rod occasionally to allow water to run past the rod and soften the earth at the point. Add more water, as necessary, to puddle the soil.

(d) Continue driving the rod in this manner, until the top end is at least 1 foot below the surface of the ground.

3.32 Install the remaining ground rods in the bottom of the trench in the same manner.

3.4 Connecting Ground Wire

3.41 Lay the No. 6 ground wire along the bottom of the trench from the pole to the last ground rod of the multiple ground system. If considered more convenient, the wire may be laid out from rod to rod, after connecting the wire to each rod in turn. Be sure that the wire is given a gradual bend at the pole.

3.42 At the first rod, remove approximately 6 inches of insulation from the ground wire and clean the bare conductor thoroughly with a wire polisher. (This will leave approximately

(Please turn to page 38)

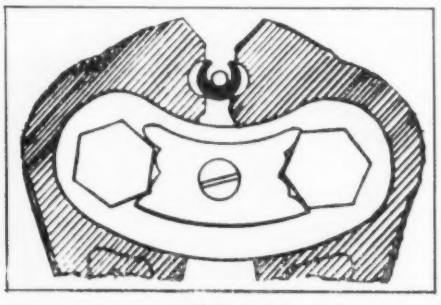


Fig. 6

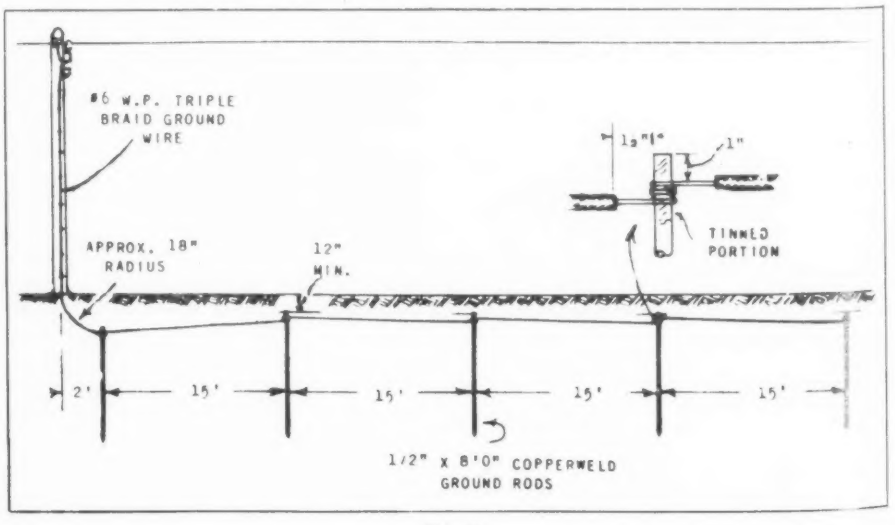


Fig. 7

THE PLANT MAN'S Notebook

by Ray Blain, Technical Editor

THE SECOND annual symposium on the "Technical Progress in Communication Wires and Cables," sponsored by the Signal Corps Engineering Laboratories, was a big success. This meeting was held at the Berkeley-Carteret Hotel, Asbury Park, N. J., with a registration of well over 500. Over 125 different manufacturers were represented. Twenty-eight papers on wire and cable subjects were interestingly presented and discussed. As a result of the interest expressed by all in attendance, it has definitely been decided to make this meeting an annual affair. It may eventually develop into a trade association for the wire and cable industries.

The papers presented were all outstanding in the writer's opinion, but because of the lack of space, only those that will prove of special interest to operating men will be mentioned here.

A paper titled "The Fatigue Life of Stranded Hookup Wire" was presented by D. C. Alexander of the Surprenant Manufacturing Co. This paper explained how various tests are made in the laboratory in order to determine what type of wire and connector is best suited to various types of service.

Frequently, troubles on wire and cable terminations may be traced to a wrong type of connector for a certain conductor. It is obvious that improvements can and will be made in wire and cable terminations which will materially reduce this all too-frequent trouble.

Another interesting paper, "Natural Aging of Neoprene-Jacketed Drop Wires," was presented by R. H. Dudley and C. A. Larsen, of the Whitney Blake Co. In this paper, the history of drop wire was traced in a most interesting manner from the beginning to the present time. Numerous drop wire improvements have materially strengthened this one-time weak link in our wire communication systems.

We all agree that plastic-insulated and jacketed cables have found their place in the communications field. However, there is much activity in the operating field being directed to find an improved method for splicing plastic cable. Cable manufacturers themselves are exerting a worthy effort to develop a splicing technique that will prove adequate and satisfactory for construction men in the field.

As a result of this concerted effort, we have every reason to believe that the problem will be solved in the near future.

In line with this thinking, E. W. Bollmeier of the Minnesota Mining & Manufacturing Co. presented a paper on "New Materials for Splicing Wire and Cable." The laboratories of this company have conducted research to solve the basic problem of packaging casing resins for field use in the insulating of splices in wire and cable.

This research has led to the development of a package consisting of a flexible film envelope containing both resin and catalyst separated by a thin rupturable membrane. The membrane, while sturdy enough to permit rough handling, can be broken by squeezing one end of the envelope. After rupture, mixing is accomplished by alternately squeezing opposite ends of the package until uniform color is attained. One of the two components contains a dye as an indicator of uniform mixing.

Mixing is accomplished in seconds without error or special skill. Pouring of the resin can then proceed immediately around whatever component is to be insulated.

In order to cast liquid epoxy resin around a splice with assurance of proper thickness and distribution, a properly designed mold must be provided for consistent results. It was claimed that excellent results can be obtained with molds field-constructed of many materials. For standard splices, it is advantageous to provide permanent one-use molds designed to produce castings of uniform quality.

Another paper of particular interest to operating telephone people was titled: "Thermoplastic Insulated and Sheathed Telephone Cables for REA Borrowers' Systems," and was given by J. L. Robb, U. S. Department of Agriculture, Rural Electrification Administration. This paper explained in detail how the REA specifications for plastic type cable were developed in cooperation with the various manufacturers.

One of the outstanding papers presented, not having to do directly (although closely allied) with wire and cable, was "Factors in the Selection of Carrier Systems" by H. R. Huntley of the American Telephone & Telegraph Co. The audience was advised that carrier is coming to be the primary method of supplying telephone circuits which exceed a relatively few miles in length. For example, a very large proportion of the circuits in the Bell System, over about 100 miles long, are now on carrier, and practically all of the growth in circuits over 25 miles long is obtained by means of carrier.

The main reason why there are some voice frequency circuits left over 25 or 30 miles long, is that carrier systems of types which are economical down to these lengths have not been available for enough years to displace these voice circuits through growth. With developments now in the offing, it is expected that the Bell System will soon be using carrier for even shorter distances.

A paper on "Prelashing Aerial Cable" was presented by C. Shafer Jr. of the Bell Telephone Laboratories. The Bell System has over 270,000 miles of aerial cable in service and approximately 10,000 additional miles are added each year. It is obvious, therefore, that any labor-saving technique such as prelashing would prove advantageous to the Bell System.

On the ever-welcome practical side was a paper on "Plastic Aerial Cable Construction," presented by D. J. Neale Sr., president of the Neale Construc-

(Please turn to page 40)

ACCOUNTING FORUM

by C. R. AAGAARD, Auditor, Illinois Central Telephone Co., Clinton, Ill.
A Gary Group Company

PUTTING YOUR PURCHASE ORDERS TO WORK

. . . Purchasing procedure can make orders do triple duty—reduce costs, give better control and promote good office management.

ALTHOUGH purchasing of materials, supplies and services for a telephone company is not an accounting department function, it is, nevertheless, quite closely related to accounting operations. The end result of every purchase, insofar as accounting is concerned, is an invoice or bill to be recorded on the books. Purchasing generally must be closely related to some kind of budget planning, so that cash will be available to pay for purchased items as bills fall due. An efficient purchase order system is essentially a matter of good office management.

This article describes a purchase order system developed within our company which, in three years of use, has demonstrated improved efficiency in the placing of orders, provided good co-ordination of records with the accounting department, and given us reliable management and budget controls. There are many other "systems," of course. In a large company, a separate purchasing department is a major division of the business. A small company will need only a simple, inexpensive plan. However, even the very small company must use some method of placing its orders, following deliveries, and settling the resulting bills. The plan described in detail here may quite readily be simplified for the small company or elaborated for the larger operation. Equally important is the fact that the plan helps keep the clerical expense of purchasing functions at a low level.

In considering the type of purchasing procedure best suited to your own company, it might be well first to make a review of the total dollar value of your purchases covering a year. Even after excluding expenditures such as payrolls, taxes, petty cash, rents and house services, it will still be found that a substantial sum is involved for materials, supplies, services and similar items which must be individually ordered, received and accounted for. Second, these questions might be applied: Does purchasing involve a minimum of "paper work" with little "repeat" writing? Are delayed deliveries promptly followed up? Can bills readily be associated with the materials they cover? Are all invoices properly approved with assurance material was received, and in good condition? Will cash be on hand to meet all bills as they mature?

An adequate purchase order procedure should supply a "yes" answer to the foregoing questions, and it ought to accomplish the following results:

(1) Permit careful review before ordering, with necessary approvals as to quantities, specifications, prices, and intended use.

(2) Provide for issuance of purchase orders of uniform style, promptly with minimum clerical expense.

(3) Allow systematic follow-up on deliveries.

(4) Furnish a means of recording receipt of goods when delivered.

(5) Provide a reliable basis for approving invoices before payment.

(6) Assure adequate management control of financial obligations incurred.

(7) Permit co-ordination between telephone company departments, including necessary accounting information.

(8) Establish purchase records which meet requirements of regulatory commissions, tax officials, independent auditors, and which will serve, if required, in connection with appraisals and pricing studies.

The foregoing list may lead to the conclusion that a purchase order method which will fulfill all these requirements will necessitate a large volume of record keeping. It is in this respect that a *system* will help solve our problem. Having accepted the fact that some record keeping is not only unavoidable but is actually *desirable* to accomplish our purpose, our aim should then be a systematic method which meets our various requirements.

The system outlined in this article produces simultaneously all records required to handle a purchase order from origin to completion. It might be called the "Write-It-Once" method. The forms illustrated in *Figs. 1* to *6* may all be produced with only one original writing of all necessary information. By this means essential information is prepared as a by-product of the issue of the purchase order, and in advance —with clerical cost reduced.

In establishing such a system, or in reviewing an existing method, however, the initial step should be to determine what degree of control over purchasing is desirable for a given company's operations. A study of purchases made in a three-month period will disclose how many purchases involving relatively large amounts have occurred, and likewise show the volume of minor purchases. A decision may then be reached—depending on degree of control desired—that purchase orders should be issued for purchases exceeding $25 or $50. Excluded, of course, would be recurring items such as petty cash, postage, rents, utility bills, etc.

By this approach, some 70 per cent of the purchase transactions may be exempted from formal purchase order

REQUISITION

ILLINOIS CENTRAL TELEPHONE COMPANY

Purchase Order No. 512-17-204

REQUISITION INFORMATION

Req. No. X-1114 Date 11/8/53

Ordered by Warren

Dist. Mgr. Approval J.D. Date 11/8

Plant Supt. Approval C.D. Date 11/10

Approved G. Mgr. or Admin. Date 12/10

Remarks None on hand

ORDER FROM

Firm XYZ Telephone Supply Company

Street 218 North Main Street

City Anytown, Missouri

SHIP TO Illinois Central Telephone Company, Carlinville, Illinois

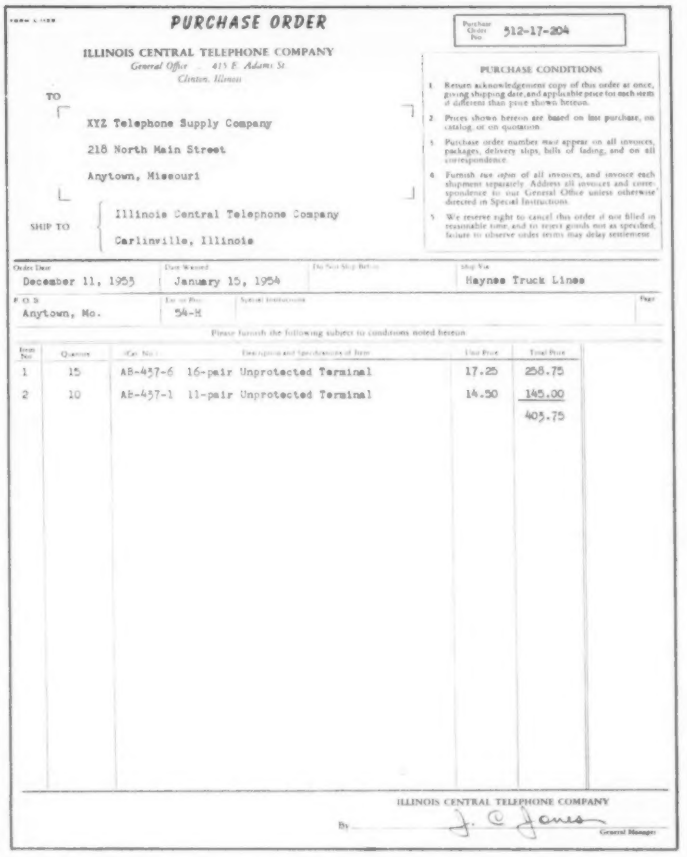
Order Date December 11, 1953 | Date Wanted January 15, 1954 | Do Not Ship Before | Ship Via Haynes Truck Lines

F.O.B. Anytown, Mo. | Ter. or Disc. 54-H | Special Instructions | Page

Item No.	Quantity	Cat. No.	Description and Specifications of Item	Unit Price	Total Price	Acct. Code
1	15	AB-457-6	16-pair Unprotected Terminal	17.25	258.75	74vE4
2	10	AB-457-1	11-pair Unprotected Terminal	14.50	145.00	74vEA
					403.75	

Field offices are not to fill out spaces with heavy rule borders. Carbon impression must be omitted, by inserting tissue separator sheet, when filling out "Requisition Information" and "Acct. Code" sections.

Fig. 1—Handwritten entries appear only on this copy, typed entries on all copies.



PURCHASE ORDER

ILLINOIS CENTRAL TELEPHONE COMPANY

General Office 415 E. Adams St.

Clinton, Illinois

Purchase Order No. 512-17-204

PURCHASE CONDITIONS

1. Return acknowledgement copy of this order at once, giving shipping date and applicable price for each item if different than price shown hereon.
2. Prices shown hereon are based on list purchase, on catalog, or on quotation.
3. Purchase order number must appear on all invoices, packages, delivery slips, bills of lading, and on all correspondence.
4. Furnish one copy of all invoices, and invoice each shipment separately. Address all invoices and correspondence to our General Office unless otherwise directed in Special Instructions.
5. We reserve right to cancel this order if not filled in reasonable time, and to reject goods not as specified. Failure to observe order terms may delay settlement.

TO XYZ Telephone Supply Company, 218 North Main Street, Anytown, Missouri

SHIP TO Illinois Central Telephone Company, Carlinville, Illinois

Order Date December 11, 1953 | Date Wanted January 15, 1954 | Do Not Ship Before | Ship Via Haynes Truck Lines

F.O.B. Anytown, Mo. | Ter. or Disc. 54-H | Special Instructions | Page

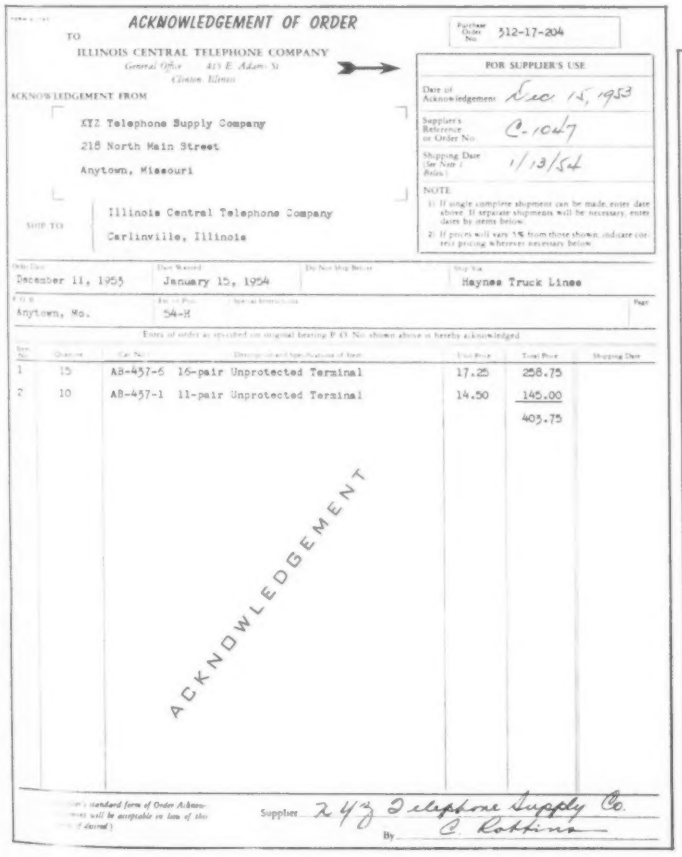
Please furnish the following subject to conditions noted hereon:

Item No.	Quantity	Cat. No.	Description and Specifications of Item	Unit Price	Total Price
1	15	AB-457-6	16-pair Unprotected Terminal	17.25	258.75
2	10	AB-457-1	11-pair Unprotected Terminal	14.50	145.00
					403.75

ILLINOIS CENTRAL TELEPHONE COMPANY

By J. C. Jones General Manager

Fig. 2—Three copies prepared (supplier, purchasing file, and originating office).



ACKNOWLEDGEMENT OF ORDER

TO ILLINOIS CENTRAL TELEPHONE COMPANY, General Office 415 E. Adams St., Clinton, Illinois

Purchase Order No. 512-17-204

FOR SUPPLIER'S USE

Date of Acknowledgement Dec 14, 1953

Supplier's Reference or Order No. C-1047

Shipping Date (See Note 1 Below) 1/13/54

NOTE

1. If single complete shipment can be made, enter date above. If separate shipments will be necessary, enter dates by items below.
2. If prices will vary 5% from those shown, indicate correct pricing wherever necessary below.

ACKNOWLEDGEMENT FROM

XYZ Telephone Supply Company, 218 North Main Street, Anytown, Missouri

SHIP TO Illinois Central Telephone Company, Carlinville, Illinois

Order Date December 11, 1953 | Date Wanted January 15, 1954 | Do Not Ship Before | Ship Via Haynes Truck Lines

F.O.B. Anytown, Mo. | Ter. or Disc. 54-H | Special Instructions | Page

Entry of order as specified on original bearing P.O. No. shown above is hereby acknowledged.

Item No.	Quantity	Cat. No.	Description and Specifications of Item	Unit Price	Total Price	Shipping Date
1	15	AB-457-6	16-pair Unprotected Terminal	17.25	258.75	
2	10	AB-457-1	11-pair Unprotected Terminal	14.50	145.00	
					403.75	

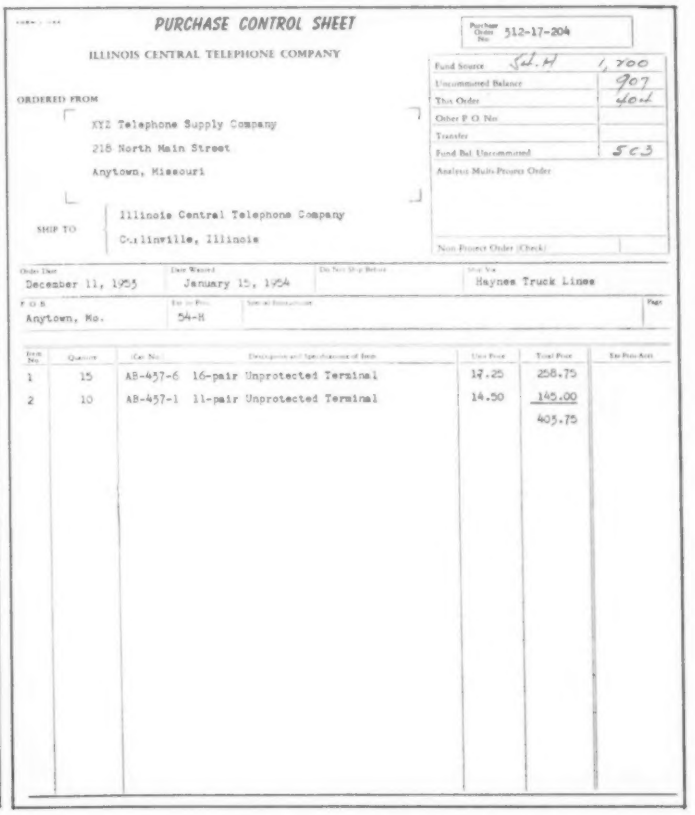
ACKNOWLEDGEMENT

Supplier's standard form of Order Acknowledgement will be acceptable in lieu of this form if desired.

Supplier 24 Telephone Supply Co.

By C. Robbins

Fig. 3—Written entries show information furnished by supplier in acknowledging order.



PURCHASE CONTROL SHEET

ILLINOIS CENTRAL TELEPHONE COMPANY

Purchase Order No. 512-17-204

Fund Source	Sd. H 1,700
Uncommitted Balance	907
This Order	404
Other P.O. No.	
Transfer	
Fund Bal. Uncommitted	503

Analyze Multi-Project Order

Non-Project Order (Check)

ORDERED FROM

XYZ Telephone Supply Company, 218 North Main Street, Anytown, Missouri

SHIP TO Illinois Central Telephone Company, Carlinville, Illinois

Order Date December 11, 1953 | Date Wanted January 15, 1954 | Do Not Ship Before | Ship Via Haynes Truck Lines

F.O.B. Anytown, Mo. | Ter. or Disc. 54-H | Special Instructions | Page

Item No.	Quantity	Cat. No.	Description and Specifications of Item	Unit Price	Total Price	Tax Price Acct.
1	15	AB-457-6	16-pair Unprotected Terminal	17.25	258.75	
2	10	AB-457-1	11-pair Unprotected Terminal	14.50	145.00	
					403.75	

Fig. 4—Written entries indicate how budget control data is posted.

ORDER TRACER

ILLINOIS CENTRAL TELEPHONE COMPANY
General Office . 415 E. Adams St. Clinton, Illinois

Purchase Order No. 512-17-204

TO: XYZ Telephone Supply Company
218 North Main Street
Anytown, Missouri

Date of Tracer: Jan. 18, 1954

SHIP TO: Illinois Central Telephone Company, Carlinville, Illinois

DELIVERY REPORT REQUESTED

Items not crossed off have not been received. Partial receipts are indicated, showing balance due.

Kindly report status of each open item by notation in column provided below. If shipped, give date. If not, give expected shipping date. If not available, advise cancellation. Use reverse side if necessary, identifying comments by Item No.

Prompt return of this Tracer will be appreciated.

Order Date	Date Wanted	Do Not Ship Before	Ship Via
December 11, 1953	January 15, 1954		Haynes Truck Lines

F.O.B.	Ex. or Prox.	Special Instructions	Page
Anytown, Mo.	54-H		

Item No.	Quantity	(Cat. No.)	Description and Specifications of Item	Unit Price	Total Price	STATUS
1	15	AB-457-6	16-pair Unprotected Terminal	17.25	258.75	Will ship on Jan 21
2	10	AB-457-1	11-pair Unprotected Terminal	14.50	145.00	
					403.75	

TRACER

Date of Reply: 1-19-54 Supplier: XYZ Telephone Supply Co. By: H. Holmes

Fig. 5—Written entries show how supplier might furnish response to Tracer.

RECEIVING REPORT

ILLINOIS CENTRAL TELEPHONE COMPANY

Purchase Order No. 512-17-204

Date Received: Jan. 13, 1954
Employee: P. Warren
If a Partial Shipment Check Here ☐

INSTRUCTIONS
1. Count shipment and prepare this Report immediately on receipt.
2. Note shortages or damage on shipping papers, and describe in Remarks space below. (Secure "loss and damage" claim report at once from carrier.)
3. Cross off any items not received.
4. Forward Report promptly to General Office.
5. Report at once any concealed damage or shortage subsequently noticed.

RECEIVED FROM: XYZ Telephone Supply Company
218 North Main Street
Anytown, Missouri

RECEIVED AT: Illinois Central Telephone Company, Carlinville, Illinois

Order Date	Date Wanted	Do Not Ship Before	Ship Via
December 11, 1953	January 15, 1954		Haynes Truck Lines

F.O.B.	Ex. or Prox.	Special Instructions	Page
Anytown, Mo.	54-H		

Item No.	Quantity	(Cat. No.)	Description and Specifications of Item	Unit Price	Total Price	QUANTITY RECEIVED
1	15 ✓	AB-457-6	16-pair Unprotected Terminal	17.25	258.75	15
2	10 ✓	AB-457-1	11-pair Unprotected Terminal	14.50	145.00	10
					403.75	

REMARKS: Freight charge - $6.14

Fig. 6—Written entries show how receipt of material is reported by receiving point.

handling. In our company, however, it was felt desirable to maintain some review on certain types of small-amount purchases. For these, the "Sundry Purchase Order" illustrated in *Fig. 7* has been found useful. These Sundry Purchase Orders are originated by district or local office supervisors, and are restricted to such items as minor building repairs, small tool and material purchases, etc. Prepared in longhand in three copies, the original goes to the supplier, the first carbon to our general office for information use, and the third copy accompanies supplier's bill when submitted for payment.

The more important purchases—the 30 per cent requiring careful attention and control—are handled on "major" Purchase Orders *(Figs. 1 to 6)*. Examination of the accompanying samples will show that the various forms have been designed so that information inserted on the "Requisition" form appears (with certain deletions) in the same position on all other forms. Our "Requisition" forms are printed on master paper suitable for a spirit duplicating machine, so that all resulting copies will be fully legible. However, all copies might also be made up by regular carbon paper and a typewriter, or "snap-out" carbon sets might also be used if volume justifies their cost.

To reduce repeat writing of information, the requisition form is originated with duplicator carbon at the exchange or office requiring the material. No entries are made by originating office, however, in the spaces in heavy rule boxes, and the entries under "Requisition Information" and "Account Code" appear only on the Requisition form (this being accomplished by removing the duplicator carbon paper).

When the requisition is reviewed by the purchasing officials entries are added to show purchase order number, order date, and delivery limit date if required. After check of pricing, descriptions and other terms has been made, approvals are inserted, and all copies as shown in *Figs. 1* to *6* are run off. The original is then signed by appropriate company official. The distribution of the various copies is as follows:

(1) Purchase Order (white)—mail to supplier.

(2) Acknowledgement (green)—mail to supplier.

(3) Purchase Control Sheet (orange)—for puchasing department or for accounting department use in budget control.

(Please turn to page 41)

ORDERED FROM: Danners Office Supply
Address: 317 Broadway
City: Centerville, Ill.

SUNDRY PURCHASE ORDER
ILLINOIS CENTRAL TELEPHONE COMPANY
(This Order Not Valid for Purchases Over $25.00)
Form L-114

Date of Order: Dec. 7, 1953
Purchase Order No.: S-49
Deliver to us at: Clinton
Date Wanted: 12/10/53
Show P.O. Number on Invoice and Send to us at: 415 E. Adams - Clinton

PLEASE FURNISH THE FOLLOWING:

Item	Quantity	(Cat. No.)	Description and Specifications of Item	Unit Price	Total Price
1	1 Case		Standard adding machine rolls		16 50
2	24		#1492 Red pencils	.10	2 40
					18 90
			3 of		38
					19 28

Special Instructions:

For Audit Use
Proj.

ILLINOIS CENTRAL TELEPHONE COMPANY
By: W Reece Title: D. Mgr.

Fig. 7—Specimen of completed "Sundry Purchase Order."

CABARET and KITCHEN...

What's the Connection?
Answer: EXCISE TAXES

FOR most people an evening at a cabaret is a luxury. George and Helen usually splurge once a year, on their wedding anniversary, and enjoy an evening of dinner and dancing.

But they use their telephone service every day. It is not a luxury. It's one of their household necessities.

Yet for tax purposes both are put in the same class.

The excise tax on cabaret charges is 20 per cent. But telephone users pay even a higher rate than that on long distance calls, 25 per cent, as well as 15 per cent on local service.

The higher excise tax rates usually apply to "luxury" items. The outstanding exception is telephone service, which is not only taxed at high luxury rates but is the only one of the four household necessities—water, electricity, gas, and telephone—that is subject to *any* Federal excise tax.

Any reduction in these taxes would accrue directly and immediately to telephone users.

TELEPHONY EDITOR'S NOTE: All telephone people are urged to write their congressmen and senators requesting repeal of excise taxes on telephone service.

Any reduction in these taxes would accrue directly and immediately to telephone users not to the telephone company. The company acts merely as the agent of the Government in collecting this tax.

We recognize the Government's need for adequate income and for the balancing of its budget. But when the time comes for Congress to consider excise tax reductions, we firmly believe telephone excise taxes should be among the first to get attention.

—Reprinted courtesy of Wisconsin (Bell) *Telephone News.*

The OPERATOR'S CORNER

by MAYME WORKMAN, Traffic Editor

NO DOUBT you have heard the song, "Enjoy Yourself, It's Later Than You Think!" I read an article recently in a popular magazine with a much more interesting title—"You're Younger Than You Think!" This article, by Ray Giles, will give a real lift to those of us who have reached the age of 40, 50, 60, 70, or 80 or 90.

But you may say, "No one that old is working in the telephone industry." Since reading the article by Mr. Giles, I would like to say, "Oh, but we do have someone that *young* working in the telephone industry." She is Mrs. Esther Young, of The Columbia (Pa.) Telephone Co. Mrs. Young was 95 years of age on Nov. 1, and I am sure she will not mind my telling her age because she is proud of the fact that she is still active in the work she loves.

While this information is of particular interest to operators who are past 40 (who have just "started to live" since life is supposed to begin at 40), the youngsters in our industry might take heed since they, too, have life to look forward to.

Mr. Giles stated, "When classes in adult education began in an Eastern city, those who joined were asked why they did so. A 43-year-old man replied, 'Because I don't want to die at 50 and wait until I'm 70 or 80 to be buried.' He didn't realize it, but he was sounding what ought to be the battle-cry of every adult in America."

The modern scientific study of aging, called "gerontology" has revealed that after 50, not one person in 10 gets the pleasure or achievement out of living that, with a little planning and effort, might easily be had. Echoing the opinion of physicians, psychologists, and other specialists in this field, Dr. Martin Gumpert states, "Middle age, the so-called period of maturity, ruins, as it is lived today, the so-called period of decline."

The modern program for better living after 50 begins with realizing how much better off we are than our parents were. We have not only more years to live, but better health than they had after 50. Even more exciting are the opportunities all around us to make more of our unused capacities for lifelong enjoyment and progress, than any previous generation has ever known.

Speaking of our present day medical science (if I may be pardoned for a personal reference) if I had been born in my father's era, I would now be totally blind. Because medical science of that day had not learned how to remove cataracts to restore vision to eyes blacked out by this growth. Whereas today, with the cataracts removed and having been properly fitted with glasses, I shall have 20-20 vision.

According to the author, "You cannot begin too early!" Studies of happy, go-ahead older people prove conclusively that they didn't suddenly become interested in people, places, current events, new developments, study courses, and their hobbies at 40, 60, or 70. While still in their 20's and 30's they made interest and participation in all phases of living a settled habit. So fortified, any man or woman can come to the 80th birthday as did the aging Oliver Wendell Holmes, who exulted, "I had much to learn, and at 80 I find new vistas opening all around me!"

The daily practice of abundant living, as you see, has double pay-off. It can double life's pleasures at 30 at the same time paving the surest possible road to happiness after 50. In a very real sense you begin now to enjoy tomorrow.

Life expectancy at birth, only 49 years in 1900, is about 20 years more today, and continues to increase. The older you become, the greater your personal life span is likely to be. And here is a break for us, girls. Life expectancy for women is even greater than for men. So—in effect, we are 15 years younger than our parents were at the same age.

After 50, we get a break. How young is "young"? How old is "old"? The article states, "In your 30's you consider yourself still youthful. Actually, a lot of aging has already taken place in your body. Even before you were born, senile changes had occurred in certain blood vessels. You "aged" rapidly when you were a child. Your metabolism slowed substantially during the period between infancy and your 20th birthday. Chances are, at 20 your hearing was less acute than it formerly was, and your knees less supple. You had become less able to indulge in spurts of explosive energy or any long stretches of high effort. By the time you were 30, your arteries may already have begun to harden."

According to Dr. Edward I. Stieglitz, a leader in geriatrics, the most critical period of aging occurs between the ages of 40 and 60. It is in this period, he observes, that the changes that will ultimately disable, begin. During this time we can hope to accomplish something by preventive measures, such as periodical health examinations, which may disclose trouble while it can still be nipped in the bud. Sticking your head in the sand, like an ostrich, to avoid finding out there is something wrong with you, is the worst possible procedure.

In his book, "The Second Forty Years," Doctor Stieglitz cheerfully reports, "Aging slows down as you grow older. This is one of the compensations for later years." At 50, most of your worst aging is already behind you. That may be why older people often tell you they don't feel much older at 70 than they did 10 or 15 years earlier in life. This is borne out in a letter I received recently from an aunt of 82 in which she stated, "I am enjoying the best of health and honestly, I don't feel a day over 50."

We will not have the zip at 50 or 70 that we enjoyed at 30 or 40, but we should not make the mistake of believing that as physical energy les-

(Please turn to page 44)

AFTER conversion to Strowger Automatic, Mr. Maser's business climbed to 326 stations.

and remember—

month by month

Strowger Automatic installations exceed all others

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems

Makers of Telephone, Signaling and Communication Apparatus • Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: AUTOMATIC ELECTRIC SALES CORPORATION
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

★ ★ ★ IN THE ★ ★ ★ NATION'S CAPITAL

by FRANCIS X. WELCH — WASHINGTON EDITOR

Public utilities not mentioned in President's State of the Union message for the first time in many years. SEC drops "nuisance" proxies. Surge of telephone rate increase cases comes with New Year.

PROBABLY the most refreshing aspect of the President's State of the Union message to Congress, last week, was its complete lack of narrow partisan approach. This may be due, of course, to the fact that the President is faced with only a razor-edge majority of his party in the House and actually lacks a majority, by a single vote, in the Senate.

But whatever the cause, it represents a marked change from the invective and argumentative tone of other messages sent to Congress from the White House in recent years. The President spoke of the State of the Union as if he meant to deal with the State of the Union, and was not trying to start a lot of extraneous political arguments.

Because of its wide scope, dealing in more than a score of individually important topics, the President could not go into detail. It was admittedly only an outline of further messages to come, on such matters as taxes and budgets, military defense, farm legislation, etc. But the President showed enough of his cards to indicate that he has taken command. During the past year there has been some criticism in Washington over the tendency in the White House to take an Alphonse-Gaston attitude in its relation with Congress.

But without throwing any weight around, there was a complete absence of such timidity—if that is the word—in the President's latest message. This time, Ike is telling them what to do. If they don't do it, it is going to be on their own heads in the campaign next November. The words were polite and diplomatic. The appeal was to "both of our great parties." But the meaning was clear. Nobody is going to run out on a major test vote this year, without catching an AWOL label from the top command.

All this may be part of a planned pacing of presidential strategy. On the other hand, it may be simply the result of a new man taking a strange job and requiring a year to learn the ropes. Even in his military career, Eisenhower was known as a slow starter but a decisive finisher. In any event, congressmen will not have to wonder where they stand on the major issue messages as they develop—judging by the tone of the opening message.

In some ways it showed remarkable political courage. Despite the outcries from the farm element (whose votes are essential to any GOP success at the polls), the President told the Congress, in effect, that farmers cannot expect to ride indefinitely on the back of other segments of our economy.

There will be outcries as a result of the President's proposal to stop the automatic tax reduction (from 52 per cent to 47 per cent and reduction of certain excise taxes (not including telephone) due to expire. In fact, chances are good that Congress will not let Eisenhower have his way on these. But here again the President put his own ideas on the line; and told Congress very diplomatically to like it or lump it. This writer is inclined to believe that they will lump it; and vote for more tax reductions.

On the whole, however, it was a middle-of-the-road message from a president who campaigned on a promise to be middle-of-the-road. Left-wingers, who have been raging about the alleged invasion of civil rights of federal employes and others accused of subversive activities, could find no comfort in the President's words. On the other hand, right-wingers were assured that the government is not going to renege on social reforms and responsibility which have obviously been approved by a majority of the people.

There was a bold stroke, too, in his proposal of a constitutional amendment to lower the voting age from 21 to 18. The greatest success of the President's political Democratic opposition, over the past two decades, has been its appeal to youth. Eisenhower, sensing a close fight in the coming elections, moved in unexpectedly to reverse that appeal. Whether it will pay off remains to be seen, of course.

For the first time in many years—as far as this reporter can remember—public utilities and matters directly affecting them got no mention. This is certainly a change from the brickbat treatment the electric companies have received for years and years. The President made some general statements about conservation and the need for cutting down logrolling and waste in building giant dams. He appealed for more local cooperation and "partnership" in the development of natural resources for irrigation, power, etc. But these generalities will have to be spelled out in specific messages before the administration's intent is clarified.

Even the politically popular REA failed to be mentioned by name for the first time in heaven knows when. Of course, REA will come in for its share of attention when Agriculture Department appropriations are considered.

But altogether the "new look" of administration policy certainly does not seem to be in the direction of public utility relations with government—as far as major emphasis is concerned. This is probably good. Certainly it is different.

SEC Drops "Nuisance" Proxies

On Jan. 7, the Securities & Exchange Commission (SEC) took final action on a matter which has been bothering a number of stock corporations, including telephone companies, for a number of years. It is the problem of sending out to all stockholders—along with the usual proxy requests in advance of the

annual meeting—certain proposals by minority stockholders.

Before taking its action last week, the SEC rules on what literature could or could not be excluded by management was very uncertain. Management of many corporations complained that they were being burdened by so-called nuisance proposals made by stockholders at annual meetings. These included propositions dealing with personal interests or ideas of the stockholders making the proposals, frivolous or repetitious propositions having little or nothing to do with corporate affairs.

Last month, spokesmen for the American Telephone & Telegraph Co., and a professional stockholder group—United Shareholders of America—took opposite sides on the SEC proposals to change the rules for rounding up absentee stockholder votes by proxy. These two, and other witnesses, discussed the question of including or leaving out stockholder proposals when a company's management sends information to its owners preliminary to a stockholders' meeting.

Speaking for AT&T, Attorney George A. Brownell of New York said stockholders rarely use their rights to have proposals included in proxy material distributed by management, so this privilege granted by the SEC is "not desired or needed." Benjamin A. Javits, president of United Shareholders, disagreed, saying a stockholder "should have every opportunity to express himself." He said stockholders impose "extremely minute" burdens on management and he does not believe "sound" company officials want to keep any information secret.

Brownell said the rule, which permits inclusion of stockholder proposals in proxy material, is used mostly "by a small group who have some special interest to serve." L. R. Breslin, Jr., representing Bethlehem Steel Corp., said addition of a large volume of stockholder proposals to a proxy statement "obscures really important" information about company matters. He supported the SEC's proposal to ban unlimited repetition.

A labor union attorney raised the point that employe ownership of shares is increasing in the AT&T. The suggestion was made that as this proportion of employe ownership groups rises, the general stockholder list might be more constrained to consider proposals from such stockholders, in their capacity as employes—presumably proposals having to do with the corporation's employment or working condition policies.

But the SEC, last week, finally decided to change the rules so as to exclude certain types of stockholder proposals from the proxy soliciting literature. One change would prevent a stockholder from bringing before the meeting a proposal which, under state law, is not a proper matter for a vote but is, instead, a matter for ordinary management decision.

The previous SEC regulation said firms could omit from the proxy notices any proposal which was "not a proper subject for action by security holders," but did not define the term "proper subject." Under the new SEC amendment, the corporation is governed by the law of the state in which the corporation was organized, even though this may be a different state from the one in which it has its principal offices and operations. The burden of proof will be on the management, however, to show the SEC that it is acting in accordance with state law, and the commission will base its decision in disputed cases on the state statutes.

The amended rules permit corporations to exclude any proposal whose aim or effect would be to press a personal claim of a stockholder or redress a "personal grievance" or promote

(Please turn to page 42)

1954 CONVENTIONS

Minnesota Telephone Association, Radisson Hotel, Minneapolis, Feb. 1, 2 and 3.

Louisiana Telephone Association, St. Charles Hotel, New Orleans, Feb. 24 and 25.

Kentucky Independent Telephone Association, Phoenix Hotel, Lexington, Mar. 2.

Texas Telephone Association, Texas Hotel, Ft. Worth, Mar. 15, 16 and 17.

Nebraska Telephone Association, Paxton Hotel, Omaha, Mar. 23 and 24.

Ohio Independent Telephone Association, Deshler Hilton Hotel, Columbus, Mar. 29, 30 and 31.

Iowa Independent Telephone Association, Fort Des Moines Hotel, Des Moines, Apr. 6 and 7.

The Illinois Telephone Association, Pere Marquette Hotel, Peoria, Apr. 26 and 27.

Wisconsin State Telephone Association, Loraine Hotel, Madison, May 5 and 6.

United States Independent Telephone Association Executives Conference, Broadmoor Hotel, Colorado Springs, Colo., May 10 and 11.

Kansas-Missouri Telephone Associations (joint convention), Muehlebach Hotel, Kansas City, Mo., May 17, 18 and 19.

Pennsylvania Independent Telephone Association, Bedford Springs Hotel, Bedford, May 25 and 26.

New York State Telephone Association, Scaroon Manor Hotel, Schroon Lake, June 7, 8 and 9.

California Independent Telephone Association, Fairmont Hotel, San Francisco, June 10 and 11.

Indiana Telephone Association, Claypool Hotel, Indianapolis, June 17 and 18.

Oregon-Washington Independent Telephone Associations (joint convention), Multnomah Hotel, Portland, Ore., June 18 and 19.

Michigan Independent Telephone Association, Pantlind Hotel, Grand Rapids, Sept. 9 and 10.

Rocky Mountain Telephone Association, Newhouse Hotel, Salt Lake City, Utah, Sept. 16 and 17.

Arkansas Telephone Association, Majestic Hotel, Hot Springs, Sept. 20 and 21.

United States Independent Telephone Association (annual convention), Conrad Hilton Hotel, Chicago, Oct. 11, 12 and 13.

North Carolina Independent Telephone Association, Carolina Hotel, Pinehurst, Oct. 21 and 22.

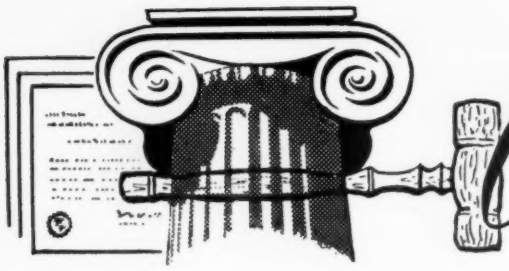
South Carolina Independent Telephone Association (hotel unannounced), Myrtle Beach, Oct. 25 and 26.

Virginia-West Virginia Independent Telephone Associations (joint convention), Roanoke Hotel, Roanoke, Va., Oct. 28 and 29.

Oklahoma Telephone Association, Huckins Hotel, Oklahoma City, Nov. 4 and 5.

Alabama-Mississippi Telephone Association, Thomas Jefferson Hotel, Birmingham, Ala., Nov. 8 and 9.

Florida Telephone Association, Soreno Hotel, St. Petersburg, Nov. 15 and 16.



Courts and Commissions

C & P of West Virginia Applies For General Rate Raise

The Chesapeake & Potomac Telephone Co. of West Virginia recently filed a general upward revision of rates which, according to C. H. Johnson, vice president, is needed to enable it to strengthen its financial position and proceed with a statewide program of service improvement and expansion.

The revisions filed with the West Virginia Public Service Commission called for increases in the basic rates of both business and residence service.

Citing an expenditure of 64 million dollars for gross construction since 1945, the company said it expended about 10 million dollars in 1953 and that programs of equal size would be required for the next several years to expand facilities and provide West Virginia with more and better service, both local and long distance.

V V

Two Sales Authorized by Minnesota Commission

The purchases of two Independents were approved on Dec. 29 by the Minnesota Railroad & Warehouse Commission.

The Farmers Telephone Co. of Emmons, serving approximately 541 stations, was sold to the Winnebago Cooperative Telephone Association.

The New York Mills Telephone Co., with its approximately 500 stations, was bought by the East Otter Tail Telephone Co.

V V

Approve Rate Increases for Two Minnesota Companies

Minnesota Railroad & Warehouse Commission on Dec. 29, 1953, authorized rate increases for both the Hitterdal Telephone Exchange and the McGregor Telephone Co.

To the Hitterdal company, serving 14 local and 116 rural subscribers, the commission granted a rate schedule that would give the company a 5.36 per cent return on a plant original cost of $23,500. Improvements in the Hitterdal exchange plant, including conversion to dial, were completed shortly before the commission order was issued. Operating revenues will be up to an estimated $5,123 from the former $3,969, and net income to $1,260 from $664.

The old and new rates are:

	Old
One-party business	$2.50
Rural multi-party —company-owned	2.00
	*New**
One-party business	5.00
Two-party business	3.25
Four-party business	3.00
One-party residence	5.00
Two-party residence	3.25
Four-party residence	3.00
Rural multi-party —company-owned	2.75

*Gross rates—a discount of 25 cents a month allowed for payment in advance.

The McGregor company's increases were estimated to produce $13,592 in operating revenue (up from $11,768) and $1,898 in net income (up from $742). This net would be a return of 3.52 per cent on an original cost of plant of $53,886. The company serves 59 local and 218 rural stations.

The company was permitted to place in effect rates and charges applied for, except rates for rural service where there are more than 12 subscribers on a line. The existing rates for this service are to continue until the McGregor company reduces the number of stations per line to 12 or less.

Old rates and the approved schedule are as follows:

Business	*Old**	*Approved†*
One-party	$3.75	$5.00
Two-party	3.25	—
Multi-party	3.25	4.00
Rural multi-party	3.00	3.75
Residence		
One-party	2.75	3.75
Two-party	2.50	3.25
Multi-party	—	2.50
Rural multi-party	2.25	2.50

*Old rates are net and include a discount of 25 cents a month for payment in advance.

†Approved rates involve no discount, the prompt payment discount plan being discontinued.

V V

Bell of Nevada Gets Increases

Bell Telephone Co. of Nevada recently secured approval of rate increases totaling approximately $256,000 annually from the Nevada Public Service Commission (TELEPHONY, Oct. 24, p. 128).

N. C. Company's Rate of Return Ruled Inadequate; Gets Raise

Albemarle Telephone Co. on Jan. 4 was authorized by the North Carolina Utilities Commission to increase its rates an estimated $34,152 (TELEPHONY, Dec. 12, p. 34).

The company stated it needs the extra income to help finance a new central office and to improve its financial condition. Also, the company said that recently it had barely earned expenses.

Ruling that the company was earning less than an adequate return on its investment, the commission approved rate increases whereby the company's rate of return will be raised from 3.02 to approximately 6.5 per cent.

The commission said 94 per cent of the Albemarle company stock is owned by the Concord (N. C.) Telephone Co. Also, the commission noted that Albemarle has had difficulty selling its stock and no success in selling all its properties.

Concord Telephone, the parent company, has been unable, the commission said, to purchase more of the Albemarle company stock. Also, investors and agencies from whom Concord has obtained money in the past, have been unwilling to advance additional funds.

The Albemarle company told the commission it needs funds for a new central office at its Albemarle exchange and for a dial exchange at Misenheimer.

The commission approved new rates for three of the Albemarle company's exchanges as follows:

Albemarle

One-party residence	$3.75
Two-party residence	3.00
Four- and five-party residence	2.00
Multi-party rural residence	2.25
One-party business	5.75
Two-party business	5.00
Four- and five-party business	3.75
Rural multi-party business	4.00

Badin and Oakboro

One-party residence	3.25
Two-party residence	2.50
Four- and five-party residence	2.00
Multi-party rural residence	2.25
One-party business	5.00
Two-party business	4.25
Four- and five-party business	3.75
Rural multi-party business	4.00

Commission Sets Rates, Charges For Nebraska Independent

The Nebraska Railway Commission on Dec. 22 authorized the Tri-County Telephone Co., Wolbach, to:

(1) Increase rates on all classes of service effective on the billing date following conversion to dial.

(2) Eliminate the monthly handset charge.

(3) Eliminate the prompt payment discount plan.

(4) Eliminate the present four-party residence rate and service.

(5) Establish a 3.75 per cent depreciation rate on its depreciable property.

The commission denied the company's request to establish a charge of $12 a year for all subscribers for toll-free service from Wolbach to Greeley, but approved new rates as follows:

	Old	*New*
One-party business	$4.00	$6.00
Two-party business	3.50	5.00
One-party residence	2.25	4.00
Two-party residence	2.00	3.25
Four-party residence	1.75	—
Rural multi-party	2.25	3.25

The company provides magneto service to about 275 subscribers in Greeley, Nance and Howard counties. Conversion to dial, which was financed through a loan of $40,000 from the Stromberg-Carlson Co., Rochester, N. Y., was nearing completion at year end.

Under the new rates, annual operating revenues were estimated to be $14,035.14. Expenses were estimated at $8,952.64, exclusive of $1,255.25 in taxes. It was reported this will result in a net return per year of 6.49 per cent on an adjusted net book rate base of $58,950.

V V

Commonwealth of Pa. Authorized To Issue Stock, Bonds

The Pennsylvania Public Utility Commission recently authorized the Commonwealth Telephone Co., Dallas, to sell $2,300,000 worth of stock and bonds to pay off debts and other liabilities incurred in the purchase and construction of property.

Securities registered by the commission permit the Commonwealth company to issue $1,600,000 worth of first mortgage bonds and $700,000 worth of common stock.

Commonwealth furnishes service to 22,400 subscribers.

V V

Asks O. K. to Operate in N. Y.

New York Public Service Commission on Jan. 11 was to have heard the application of Jasper-Steuben Telephone Corp. for a certificate of public convenience and necessity to operate a telephone system in the town of Jasper, and for authority to issue 2,500 shares of $10 par 6 per cent preferred stock and 2,000 shares of $10 par common stock.

V V

Line Construction Rules O.K.'d For Nebraska Independent

Regulations concerning the construction of lines in the territory of the Chapman Telephone Association were approved on Dec. 22 by the Nebraska Railway Commission.

Hereafter the company will build the first half mile of line to serve a subscriber anywhere in its territory. The subscriber will be required to furnish and set poles the remaining distance. This will be done according to company specifications. Completed, the line becomes the company's property.

The subscriber will also pay any cost involved in obtaining necessary right-of-way (such as a permit for going under a railroad right-of-way).

The Chapman company serves 275 subscribers.

V V

New England T&T in Mass. Gets $3,000,000 Additional Rate Raise

An additional 3-million-dollar increase in rates was allowed the New England Telephone & Telegraph Co. on Jan. 6 by the Massachusetts Department of Public Utilities (TELEPHONY, Nov. 14, p. 29).

This brings to 7½ million dollars the increased telephone revenues approved by the Massachusetts commission in the latest rate petition.

The company already is collecting $10,225,000 in rate increases from subscribers under a state supreme court order, pending decision on its appeal to the high court for authorization to raise rates to this sum.

Recently, the commission only allowed the company 4½ million dollars of its petition for $10,225,000; appeal to the supreme court was immediately made to gain the remainder. On Jan. 6 the commission, in agreement with the company and the court, stipulated that an additional 3 million dollars be allowed in view of recent wage increases and other costs totaling this figure.

The increase will not be reflected in the bills of subscribers, since the company is collecting the $10,225,000 under bond. Rate payers will get a smaller refund if the court sustains the latest findings of the commission.

The commission said on Jan. 6 that the appeal of the company on the rate case will be heard by the high court on Jan. 20. It will probably be before a single justice.

With the filing of the stipulation allowing the new 3-million-dollar rate increase, a commission spokesman said the court will consider the evidence of the hearing held before the commission last year as well as additional information agreed to in the stipulation, without the necessity of remanding the case to the commission for further hearings.

In arriving at the three-million-dollar figure, the commission said, it was found that new costs required it to make provision for increased rates to meet them.

V V

North Carolina Company Wins $1,448-a-Year Rate Raise

The Wingate Telephone Co. on Jan. 4 was authorized by the North Carolina Utilities Commission to increase its rates by $1,448 a year to cover increased investment resulting from conversion to dial. The company, which serves 164 subscribers, had asked for increases that would yield approximately $2,500 a year (TELEPHONY, Dec. 26, p. 27).

At the rate hearing, a protestant complained the service was inadequate and the company inconsiderate of its subscribers. The commission concluded that complaints were caused by "poor public relations," and suggested that the company study the complaints and try to establish better relations with its customers.

The company, is owned by E. R. Ritchie, and last October converted from magneto to dial at an approximate cost of $2,400.

The commission ruled the Wingate company was not earning an adequate rate of return on its investment and approved new rates as follows:

	Old	*New*
One-party business	$3.50	$5.00
Two-party business	3.00	4.25
Four-party business	—	3.50
Rural multi-party business	—	3.50
One-party residence	2.50	4.00
Two-party residence	2.25	3.25
Four-party residence	—	2.50
Rural multi-party residence	—	2.50

V V

N. Y. Company Asks Rate Raise

The Township Telephone Co., Chaumont, has filed an application with the New York Public Service Commission for an increase in rates to become effective Feb. 1. The raise was asked in order to cover increased payroll, taxes, and additional expenses.

Dr. M. J. Kelly Cites Nation's Achievements in Research

Dr. Mervin J. Kelly, president of Bell Telephone Laboratories and one of the nation's leaders in industrial research, on Dec. 29, 1953 declared that America's research program is creating such military strength that it should deter Russia from war. But, if Russia starts a war, he said, victory for the free world should be assured.

Dr. Kelly spoke on "The Contributions of Industrial Research to National Security" before the American Association for the Advancement of Science at its annual meeting in Boston.

In a unified program of research, he said, the country's various research laboratories — government, academic, philanthropic, and industrial—are making America "the arsenal of the free world and the leader in its struggle to maintain its security." At the same time, he said, their output is helping to maintain a healthy and expanding economy in which all citizens share its social and economic benefits.

Dr. Kelly summarized America's expenditures for research: The nation is now spending about 3.6 billion dollars a year on basic and applied research. Of this, some 2.4 billion dollars is financed by the government and 1.2 billion dollars by industry and private citizens. About 2.2 billion dollars, or 60 per cent, is devoted primarily to the military and 1.4 billion dollars to the civilian economy. Industrial laboratories are doing about 65 per cent—roughly 2.4 billion dollars—of the nation's basic and applied research, with 1.3 billion dollars financed by government for military needs and 1.1 billion dollars financed by industry for civilian needs.

While these astronomical dollar-volume figures are impressive, Dr. Kelly said, the contributions to military strength and the civilian economy this money produces are even more impressive. During World War II, research revolutionized warfare with such developments as radar, sonar, proximity fuses, acoustically homing torpedoes, and atomic bombs. But since the war, he continued, new developments have been made at as great a pace; the combined effectiveness of new weapons is "appalling." As a result, he said, military manpower can actually be reduced with no sacrifice in military strength.

Dr. Kelly emphasized that at the same time research had made equally important contributions to an abundant economy and a steadily rising standard of living, achievements which are most unfavorable to the revolutionary philosophy of communism.

"These qualities of our society are of greatest importance to national security," he said. "A military potential of greatest strength will not suffice for the preservation of our free and democratic society unless it maintains and gradually enhances the qualities of living of all its people."

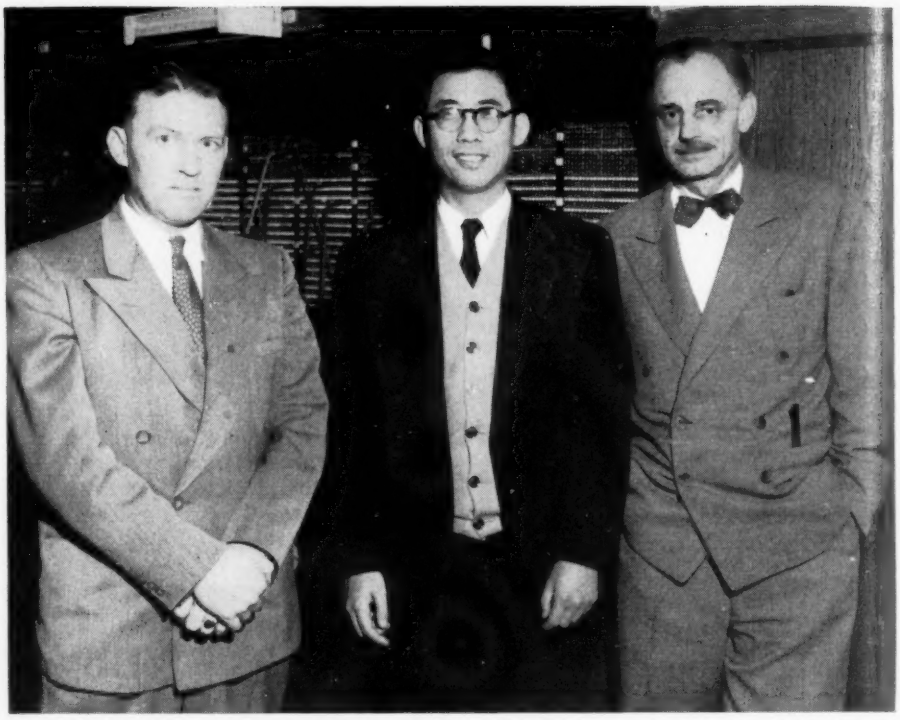
Dr. Kelly said that the nation's basic and applied research is the most essential of all the elements that contribute to these qualities of our nation's life. He cited two examples:

(1) *Agriculture.* During the past 30 years, world food production has increased less than 10 per cent while population has increased about 30 per cent. However, in the United States, applied research and technology have expanded food production more than 50 per cent with no increase in farm acreage and with a significant decrease in farm population and the individual farmer's working hours. Advances in farm machinery and agricultural chemistry have played important roles in this phenomenal progress.

(2) *Communications.* Thirty years ago, the Bell System, for example, served about 8 million subscribers; today, it serves 41 million. But this five-fold increase is an inadequate measure. Technology has so extended the physical range of telephone communication that "our whole nation has become a neighborhood," and there will be more than a million overseas telephone calls this year. Better, faster, more economic telephone service has been matched by nationwide radio and television networks, all this with only a three-fold increase in operating personnel, through the application of new scientific knowledge by industrial research and technology.

In these days of utmost peril to western civilization, Dr. Kelly said, America, with its great strength, and dedication to freedom, must make the largest contribution to the preservation of the values inherent in our western society.

"The continued security of our nation is vital to this leadership and contribution," Dr. Kelly said. "The research of the nation is essential to the maintenance of this security. Industrial research is carrying out some two-thirds of the nation's research program. Looking to the future, its responsibilities are increasingly great. The nation's industrial research is strong and is virile. I am confident that it will continue to measure up to its responsibilities."



HIEN-CHEE FANG (center), vice director of Taiwan (Formosa) Telecommunication Administration, touring the Wisconsin Rapids exchange of the Wood County (Wis.) Telephone Co. with ARTHUR CLARK (left), Wisconsin representative of Kellogg Switchboard & Supply Co., and H. B. FLOWER, manager of the Wood County company. Mr. Fang said he felt that his visit to American operating companies gave him a better grasp of problems confronting his administration of the telephone industry in Formosa. During his tour of the United States, Mr. Fang also visited TELEPHONY.

V V

NW Bell Wins Rate Raise In North Dakota

The North Dakota Public Service Commission on Dec. 31 approved rate increases for the Northwestern Bell Telephone Co., which will give the company an additional $892,000 a year in gross revenue and $411,000 more in net revenue (TELEPHONY, Oct. 3, p. 22).

The new rates, which were to have been effective Jan. 4, were approved in the commission's 2-1 vote with Chairman Elmer Cart dissenting.

Break Ground for Headquarters Of General of the Southwest

Ground-breaking ceremonies officially beginning construction of the new headquarters building in San Angelo, Tex., for the General Telephone Co. of the Southwest were held on Dec. 7, according to an announcement by the company's president, W. G. Wright (see photo).

Donald C. Power, president of the General Telephone Corp., New York City, which is the parent company of General Telephone Co. of the Southwest, turned the first spadeful of dirt at the site of the new building.

The building, a single-story structure of steel, brick and plate glass, will cover approximately four of the 10 acres which the company purchased in southwest San Angelo last July. Development of a residential area surrounding the building site already has been launched.

Designers estimate it will require about one year to complete the building. The telephone company will continue to occupy temporary quarters in downtown San Angelo into which it moved from Dallas in September.

Included on the ground-breaking program was a welcome address by A. D. Rust, mayor of San Angelo, and a response to that welcome by Mr. Wright.

Turning the first spadeful of dirt at groundbreaking ceremonies for General Telephone Co. of the Southwest's new headquarters building at San Angelo, Tex., is DONALD C. POWER, president of General Telephone Corp. General of the Southwest officials present were (left to right): DON HUNSAKER, vice president; WALTER G. WRIGHT, president; R. PARKER SULLIVAN, operating vice president, and E. C. BRINK, vice president and controller.

V V

1953 a Record Year for Bell TV Expansion

The Bell Telephone System interconnected more television stations for network service in 1953 than had been receiving network service prior to that time.

The Long Lines Department of American Telephone & Telegraph Co. said network service was made available to 140 stations in 86 cities last year as compared with 114 stations in 71 cities between the years 1948 and 1952. With seven stations added on Jan. 1, network service has now been extended to 261 stations in 161 cities.

Long Lines said September was a record month, with 41 station interconnections in 34 cities.

The year 1953 was a marker for many other highlights in the field of television transmission. The most notable of these was the first coast-to-coast experimental television show using the color signal method recently approved by the Federal Communications Commission. The program was beamed from New York to Burbank, Cal., over AT&T's 3,000-mile transcontinental radio relay route, for demonstration to an audience of 900 on Nov. 3.

Following approval of the color method by the FCC, the Bell System moved quickly to equip its facilities to meet the requirements of the broadcasting industry and by the end of the year was ready to transmit commercial color programs to some 18 cities along the transcontinental route. The Tournament of Roses Parade was the first network color program received by these cities.

Another first for 1953 was establishment of a U.S.-Canada television channel. Toronto, Ottawa and Montreal are now connected to receive network programs from the United States.

Using both radio-relay and coaxial cable facilities, Long Lines completed a number of backbone telephone transmission routes and added more than 17,000 miles of intercity video channels. Placed in service were these routes (all of which are capable of carrying video programs): Little Rock-Memphis; Chattanooga-Knoxville; Chicago-Milwaukee-Minneapolis; Chicago-St. Louis; Pittsburgh-St. Louis; Atlanta-Jacksonville; Atlanta-Louisville and Yakima-Spokane.

The Bell System now has some 50,000 channel miles of television facilities in use.

Another important event of the year was the placing in service of the first L-3 telephone carrier system between New York and Philadelphia. This system is capable of tripling the telephone capacity of present coaxial cable routes. Other routes are now being equipped with L-3 carrier.

Work was started on the following radio-relay routes which are to be used for both telephone and TV transmission: New York-Albany; New Orleans-Baton Rouge; Boston-Portland-Bangor; Jacksonville-West Palm Beach and Buffalo-Cleveland.

A Long Lines spokesman said, "The addition of these facilities provides greater flexibility in meeting the telephone requirements of the general public as well as the needs of the broadcasting industry."

V V

W. L. Huffman Named NW Bell Vice President, Iowa Manager

Wayne L. Huffman of Des Moines, Iowa, was elected vice president of Northwestern Bell Telephone Co. and general manager of Iowa operations at a recent directors' meeting in St. Paul, Minn.

Mr. Huffman, a native of Gary, S. D., joined the company in 1933 as a salesman in St. Paul. He later was toll traffic chief at Minneapolis, and district traffic supervisor at Duluth.

In 1950 he was named Minneapolis area traffic supervisor and since 1951 has been general traffic manager for the Iowa area.

Lincoln (Neb.) T&T Completes Its Toll Dialing Installation

CONNECTION with the national operator intertoll dialing system was made by the Lincoln (Neb.) Telephone & Telegraph Co. on Dec. 13. Intertoll dial switching equipment and a new 56-position toll switchboard were placed in service on that date at Lincoln in the company's new three-story equipment building.

The Lincoln intertoll equipment is now the dial toll center for operator long distance dialing in the southeast 22 counties of Nebraska. Through this equipment Lincoln company operators, together with some connecting company operators, have direct dialing connection with about 17 million telephones in the United States and Canada and 87,000 of the 115,000 telephones served by Lincoln T&T in Nebraska.

The 87,000 dial telephones of the company in 83 of its exchanges also have direct inward connection with the operator toll dialing system.

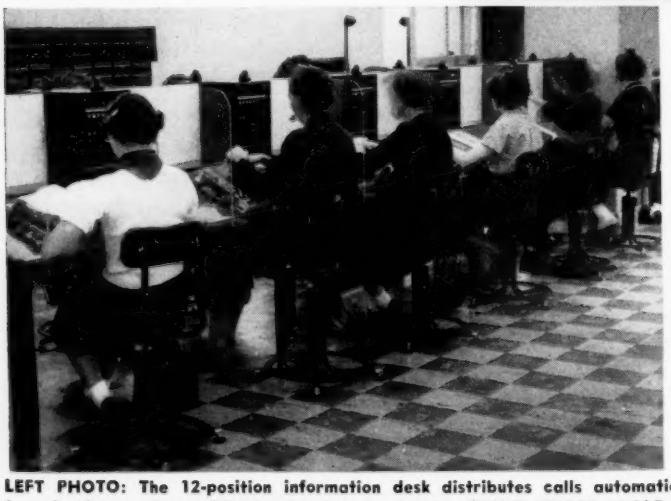
This was the last of a series of five cut-overs of new equipment at Lincoln that marks the completion of a current $3,200,000 expansion and improvement program of facilities for local and long distance service.

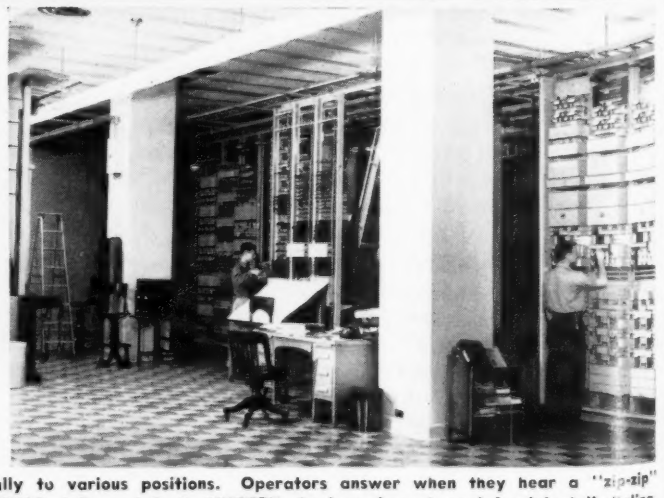
Last April local dial switching equipment for Lincoln's "5" exchange was cut from the old building to the new three-story building. In December a new "7" exchange was placed in service with lines being cut to it from the "2," "3" and "5" exchanges. Present capacity of the "5" and "7" exchanges is 6,800 lines of Automatic Electric, step-by-step, high type equipment, an increase of 3,000 lines. A line IDF provides flexibility in the cross connection of lines for number assignment and adds to cable capacity.

In December, a new PABX for the company and a new 12-position information switchboard were placed in service. The information board automatically distributes calls to the various positions and also provides for a separation of calls by key control for local information, toll and intertoll in-

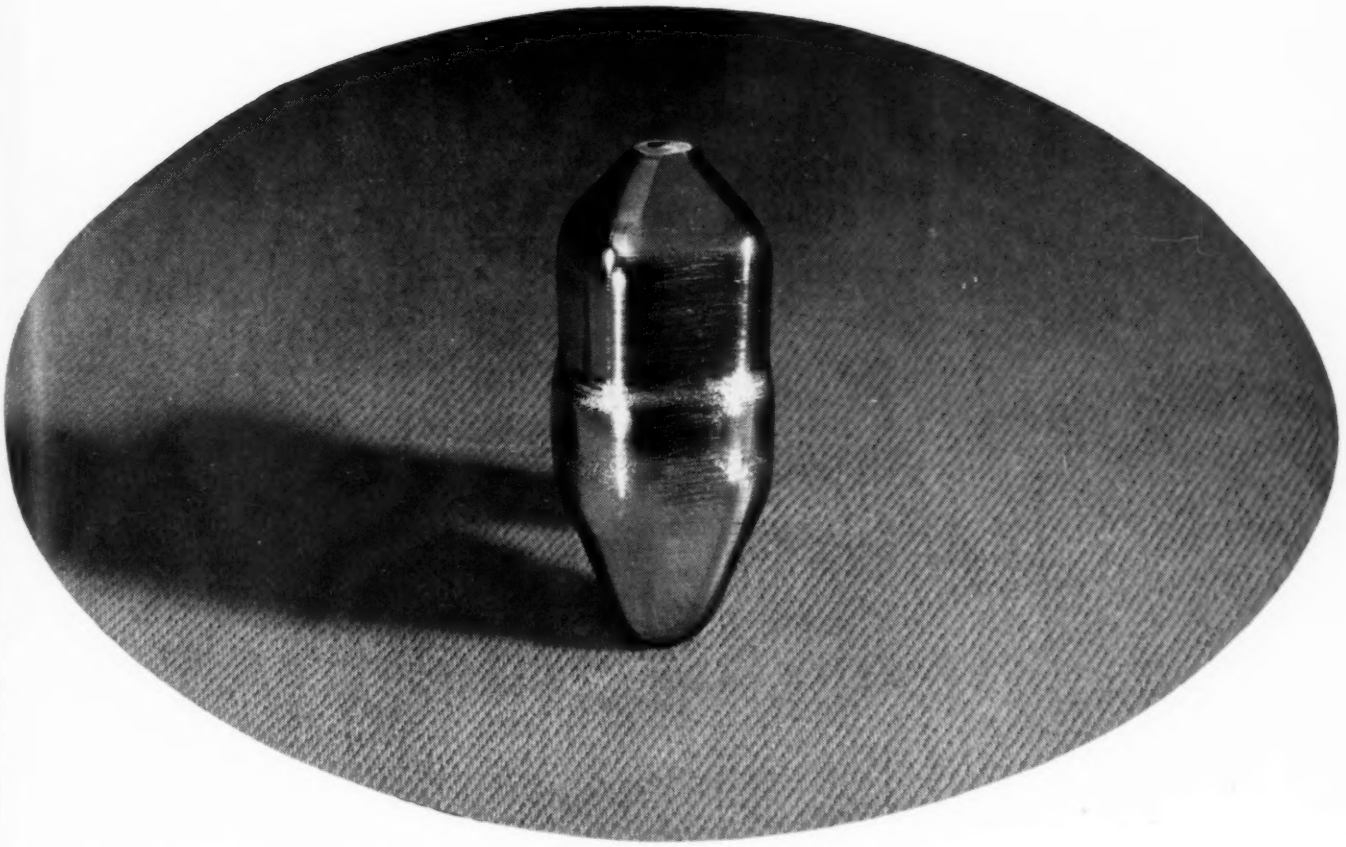
Small section of Lincoln's new 56-position toll board, from which operators can reach 17 million of the 50 million telephones in the United States and Canada directly by "keying" 11 numbers. No assistance from distant operators is required except for "Information" service.

RIGHT: Equipment in the Lincoln company's new building is the hub of the operator long distance dialing system for 125 cities in southeast Nebraska.





LEFT PHOTO: The 12-position information desk distributes calls automatically to various positions. Operators answer when they hear a "zip-zip" tone in the receiver without using keys or cords. RIGHT PHOTO: DALE WELLS, left, and R. L. HIBBERT check equipment used for intertoll dialing, serving Lincoln and 124 other cities in southeast Nebraska.



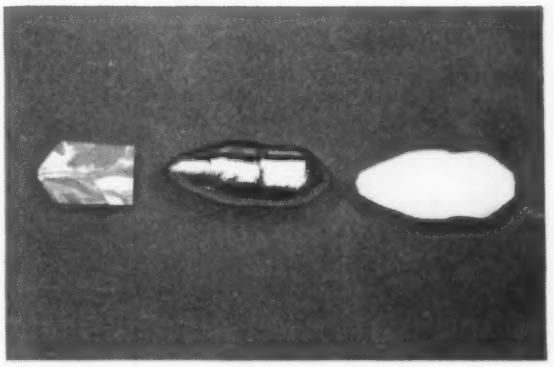
Germanium crystal grown at Bell Telephone Laboratories (life size). It is sliced into hundreds of minute pieces to make *Transistors*. Transistor action depends on the flow of positive current-carriers as well as electrons, which are negative. Arsenic —a few parts per 100,000,000—added to germanium produces prescribed excess of electrons. With gallium added, positive carriers predominate. Latest junction type *Transistor* uses both kinds of germanium in the form of a sandwich.

THEY GREW IT FOR TRANSISTORS

Heart of a ***Transistor*** – Bell Telephone Laboratories' new pea-size amplifier—is a tiny piece of germanium. If ***Transistors*** are to do their many jobs well, this germanium must be of virtually perfect crystalline structure and uniform chemical composition. But it doesn't come that way in nature.

So—Bell scientists devised a new way to *grow* the kind of crystals they need, from a melt made of the natural product. By adding tiny amounts of special alloying substances to the melt, they produce germanium that is precisely tailored for specific uses in the telephone system.

This original technique is another example of the way Bell Laboratories makes basic discoveries—in this case the ***Transistor*** itself—and then follows up with practical ways to make them work for better telephone service.



Section of natural germanium, left, shows varying crystal structure. At right is sectioned single crystal grown at Bell Laboratories.

IMPROVING TELEPHONE SERVICE FOR AMERICA PROVIDES CAREERS FOR CREATIVE MEN IN SCIENTIFIC AND TECHNICAL FIELDS

BELL TELEPHONE LABORATORIES

formation and intercepting (changed numbers).

The new 56-position toll switchboard replaces 42 positions in the old building. It is equipped with key senders and provides 30 CLR positions and 26 TX positions. It has connection with 312 toll circuits which connect into the national toll dialing network. Provision is made for an ultimate capacity of 112 toll positions.

In designing the intertoll equipment, Lincoln company engineers specified a simplex pulsing train in lieu of the more common loop pulsing train in order to gain pad control. Two DB switch pads were used in accordance with transmission standards established for nationwide toll dialing.

A major part of both local and toll equipment was installed by the Automatic Electric Co. with Lincoln T&T men handling the moving of usable equipment from the old building to the new building. Western Electric installed a TWX concentrator for trunking between Omaha and Lincoln, a voice frequency telegraph system to provide 18 telegraph trunks between these cities and 76 of the 205 channels of carrier equipment used for toll and special service facilities.

The Lincoln company will continue to occupy its old building for general offices and the Lincoln business office. Local dial switching equipment for the "2" office will also remain at the old building.

Ultimately the company plans to extend its new three-story building to eight stories and add a three-story wing. When this is done the old building will be vacated.

HISTORY OF LIBERTY

'Liberty has never come from the government. . . . The history of liberty is the history of the limitations of governmental power, not the increase of it.'

"That was said more than 40 years ago by one of the greatest students of government who ever sat in the White House—Woodrow Wilson. And the warning he issued is a hundred times more important and timely now than it was then.

"The overriding lesson that modern history teaches is that when we give government virtually unlimited power, freedom dies—and oppression and tyranny take its place."—Industrial News Review.

BUFFER PROTECTION

(Continued from page 20)

1½ inches of bare conductor on each side of the rod, after the connection is made.)

3.43 Take two and one-half turns around the ground rod to bring the last turn approximately 1 inch below the top of the rod, as indicated in the inset in *Fig. 7*. Connect the wire to the other rods in the same manner.

3.44 Using a blow torch, heat the connection of the wire to the rod to the proper temperature and flow rosin-core solder into the connection until a perfect bond results. (Note: To facilitate the soldering operation, the end of each rod is previously tinned by the repair shop.) Solder the connections to the other rods in the same way.

3.45 On completion of the soldering operation, backfill the trench.

SECTION 4
Maintenance of Buffer Protection Installations

4.1 General

4.11 Regular maintenance procedures are needed to assure reliable operation of buffer protection arrangements. This work should be handled along with the inspection and maintenance of open wire protection equipment at junctions with cable.

4.12 The buffer protection installations should be inspected once a year in the early spring, so that any unsatisfactory conditions can be corrected and the installations be put in good shape before the lightning season starts.

4.2 Maintenance Procedures

4.21 Inspect the installation for the following unsatisfactory conditions and correct any found:

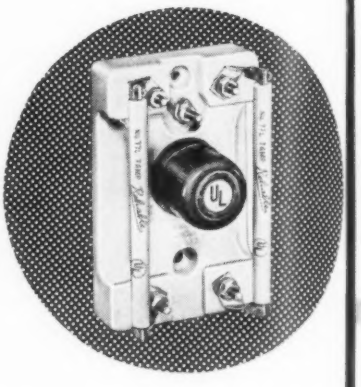
(a) *Missing or wrong type protector blocks.* Use yellow No. 31-A protector blocks with No. 26 blocks in 83-A protector mountings, or yellow No. 31-A blocks with Reliable P-367 blocks in 1,000-C protectors, or equivalent equipment, employed in buffer protection.

(b) *Missing D-15901 moisture shields.* Replace with spare shield.

(c) *Broken jumpers.* Replace with No. 14THC-2 wire and make new tap splices in accordance with instructions under Paragraph 2.42—(a), (b), (c), (d). Be sure to obtain the smooth "S" shape and close fit of the insulated wire on the line wire as illustrated. Shown in *Fig. 4*.

(d) *Broken or improperly connected ground wire.* Replace broken ground wire down pole to first ground rod in multiple ground system. Resolder new wire to this first ground rod without disturbing the connecting wire to the other ground rods.

(e) *Loose or missing pole steps.* Turn loose steps in to tighten them or redrive them slightly to one side of the old hole. If hook heads are turned

Constructio
With the Doubl
and America'
individual station protector
reliable 955A

MFD. BY RELIABLE ELECTRIC COMPA
• One-piece Design
• Simplified Mounting
• Asbestos Mats Eliminated
The very simplicity of the Reliab 955A is assurance of long, troubl free service. Fuses are mounte on a one-piece, low absorptio porcelain, well spaced for co venient connecting. Reliable Se cleaning Sawtooth Discharg Blocks are standard, dissipatin static without time lag or dang of grounding the line. The 955 uses No. 77L, seven ampe ceramic fuses.
"Reliable Identifies the Quality"
STROMBERG Telephone CARLSON
TELEPHONES, SWITCHBOARD

...laterials and Supplies...

...uarantee of Stromberg-Carlson ...eading Manufacturers...

RAYTHEON RectiChargeR*

maintains constant voltage output over the complete load range!

Maintains the close voltage limits required by telephone systems and reduces such common difficulties as incorrect ringing, line noises and lamp failures. The constant potential method of charging prevents battery gassing and water loss. A smaller maintenance crew can handle a greater number of installations.

A small storage battery floated across the terminals of a Raytheon RectiChargeR for emergency and peak period use is kept at constant cell voltage so that it never becomes overcharged or undercharged . . . thus prolonging the life of the battery.

The frequent use of the Raytheon RectiChargeR in unattended exchanges is ample proof of its dependability. Available from 1.0 to 100.0 amperes with either 24 or 48 volt output.

*Reg. U.S. Pat. Off.

the cook A-9u 7 amp. lavite fuse

For telephone men who prefer the best.

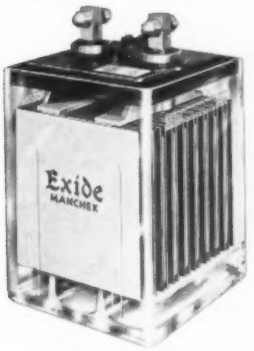
The Cook A-9u Lavite fuse is rated to blow on a 50% overload within 5 minutes.

This is in accordance with Underwriters' specifications and this fuse is listed with the Underwriters' Laboratories.

Cook also manufactures a full line of fuses carrying "Telephone Rating." These fuses blow instantly at their rated capacity.

Mfd. by Cook Electric Co.

Exide-Manchex telephone batteries



assure positive operation

For Central Office and Private Branch Exchange Equipment

This is proven daily in exchanges of every size . . . for over 60 years Exide Batteries have been serving the Telephone Industry . . . the Manchester positive plate with its exclusive button type construction provides exceptionally long life . . . latest developments on molded glass jars permit compact space saving installation . . . heavy terminal posts with copper inserts provide extra conductivity for sustained voltage at high discharge rates . . . microporous rubber along with slotted plastic separators, are impervious to chemical and electrical reactions . . . plastic spacers assure plate alignment . . . for assured dependability, long life and low-cost maintenance use Exide Manchex.

The Electric Storage Battery Co.
Philadelphia, Pa.

1888 . . . Dependable Batteries for 66 Years . . . 1954

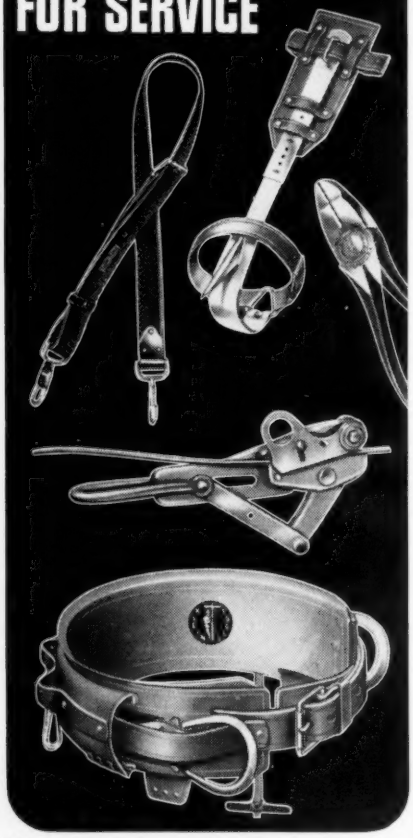
Distributed by STROMBERG-CARLSON

ROCHESTER • CHICAGO • ATLANTA • KANSAS CITY • SAN FRANCISCO • TORONTO

...IPMENT AND ELECTRONIC CARILLONS • INDUSTRIAL, INTERCOMMUNICATION SYSTEMS • TELEVISION, RADIOS AND RADIO-PHONOGRAPH...

KLEIN

Quality you can count on—FOR SAFETY... FOR SERVICE



Yes, safety and service are the two big reasons why Kleins are the choice of the man on the pole. Look for the familiar Klein trade-mark on pliers and climbers, safety straps and belts, lag wrenches and grips. It has been a trade-mark of quality "Since 1857."

ASK YOUR SUPPLIER

Foreign Distributor: International Standard Electric Corp., New York

Write for your free copy of the Klein Pocket Tool Guide today!

"Since 1857"

Mathias KLEIN & Sons
Established 1857 — Chicago, Ill., U.S.A.
3200 BELMONT AVE., CHICAGO 18, ILL.

down, return them to normal position. Replace missing steps.

4.22 Tighten all line terminal connections and the ground post screw with a 216-B wrench. Replace the moisture shield in 83-A protector. Put the cover back in place before descending the pole.

PLANT MAN'S NOTEBOOK

(Concluded from page 21)

tion Co., Inc. With reference to plastic cable construction, Mr. Neale stated, "It is my belief, from my own experience and from the experience of others from whom I have been able to gather information, that we will all be better off, in so far as a trouble-free telephone cable plant is concerned, if we give this new plastic cable the same careful consideration and treatment that we have given lead cable over the past years.

"By this, I mean, do not expect miracles from it. After all, it was not originally intended to be self-supporting nor was it intended to be used in a haphazard manner; but since there was a critical shortage of lead for the manufacture of cable sheath, a substitute had to be found."

Mr. Neale said that in some cases this particular substitute has indicated some qualities which have advantages over the original article, such as its light weight and its ease of handling in aerial construction.

On the night of the banquet, an interesting talk on communication in Korea was given by Brig. Gen. W. T. Guest, commandant, The Signal School, Ft. Monmouth, N. J.

The engineers of the Signal Corps Engineering Laboratories and the various wire and cable manufacturers are to be congratulated on the presentation of a program which proved to be extremely interesting not only to manufacturers and engineers, but to operating people of the communications industry.

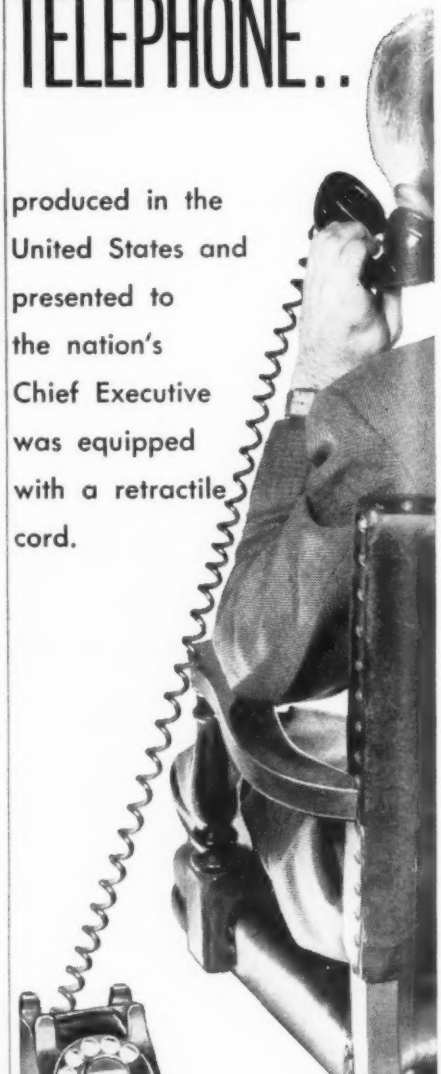
V V

General Names A. T. Baldwin Personnel Director

A. Theron Baldwin has been appointed personnel director for General Telephone System, effective Jan. 1.

Prior to joining General Telephone System, Mr. Baldwin was director of industrial relations for the New Holland (Pa.) Machine Co. He has also been director of industrial relations at Bendix Aviation Corp. and manager of personnel services for the American Optical Co.

THE 50 MILLIONTH TELEPHONE..



produced in the United States and presented to the nation's Chief Executive was equipped with a retractile cord.

KEEP IN STEP...

Specify Koiled Kords on all new telephones and use them for replacements.

Koiled Kords
INCORPORATED

Box K, New Haven 14, Conn.

ACCOUNTING FORUM

(Continued from page 24)

(4) Purchase Order (yellow)—purchasing department file folder, accompanied by the original "Requisition" form.

(5) Order Tracer (pink)—to date file for follow up use.

(6) Purchase Order (tan)—to office which originated the order, for file.

(7) Receiving Report (white, 2 copies)—to point where delivery will occur.

Since the various papers other than the "Purchase Order" form itself are designed to carry out the various requirements referred to in the forepart of this article, the following describes the use of each:

1) The "Acknowledgement" copy should be returned by the supplier to the telephone company as an indication that the order has been entered, and specifying the expected delivery date. Non-return of the "acknowledgement" should be followed up, to be sure the order was actually received by the supplier and accepted by him.

(2) Where budgetary control over purchases is necessary, the "Purchase Control Sheet" is posted in the space provided. The operating budget generally will provide a breakdown of available funds into "projects" or "sources." By deducting each order from the balance of appropriated funds, budgetary control may be kept constantly up to date. The balance of funds against which purchase orders may still be issued (the "uncommitted balance") will always be known. (This control normally would be required only in large companies, and this form may readily be omitted for small properties.)

(3) Two copies of the "Receiving Report" are sent to the point of delivery. This furnishes notice to the receiving office to expect delivery, and also provides a *pre-written* means of reporting receipt of the material promptly upon its delivery. Thus invoices may be passed for payment by the purchasing official with assurance that material is on hand. Two copies of the "Receiving Report" are prepared inasmuch as it is very common to receive multiple deliveries on delayed items.

(4) The purchasing department file copy of the "Purchasing Order" should be kept in a suitably numbered file folder with the requisition, and with it should be filed all correspondence, the returned "Acknowledgement" and the "Receiving Report" after receipt of material. As items are received, they should be checked off on the file copy of the order. By this means, the

HUBBARD SERVISLEEVS

Hot Galvanized

It takes only four or five seconds to slip the ServiSleev over the guy wire and drive it into place over the loose ends of the strand. No special tools are needed.

There is no damage to fingers; the installation is quick, neat, secure, permanent. Hubbard ServiSleevs are of unique patented design and are made of heavy galvanized steel that holds its shape and keeps its grip. They are universally used by the largest telephone companies. Available for all standard guy strand.

"Hang the load on Hubbard Hardware!"

OVERHEAD

Cable Suspension Material—Wireholders Pole Seats and Balconies—Clevises Braces—Drive Hooks—Messenger Dead Ends—Extension Arms—Long Span Material—Pins—Clamps—Guards—Stubbing Bands—Guy Protectors—Guy Clamps Pole Struts—Clips—Straps—Hangers Carriage Bolts—Rings—Transposition Brackets—Eye Bolts—Pole, Corner and House Brackets—Guy Hooks—Strain Plates—Storm Guy Straps—Lags—Machine and Hubeye Bolts—Sidewalk Guys REA Telephone Hardware

UNDERGROUND

Cable Racks—Manhole Ladders and Steps Pulling-in Irons—Expanding Anchors Cable Shields—Screw Steelwing Anchors Anchor Rods—Ground Rods and Clamps

HUBBARD AND COMPANY

ESTABLISHED 1843

PITTSBURGH • CHICAGO • OAKLAND, CALIFORNIA

items still not delivered may be determined. Further, at any time a total may be accumulated of the dollar amount of all undelivered material—often necessary in the planning of cash outlays. This copy becomes the permanent purchase record.

(5) The "Order Tracer" permits an easy follow-up with the supplier if material is not received by the promised or expected delivery date—without repeat writing of any kind.

(6) In larger telephone companies, the extra copy of the "Purchase Order," sent to the office originally requisitioning the material, will be useful as a means of reference and as an indication that the order has been issued.

(To Be Continued)

V V

"Those who deny freedom to others deserve it not for themselves, and, under a just God, cannot long retain it."
—ABRAHAM LINCOLN (In a Letter, 1859).

V V

At present, the national debt totals about 274.5 billion dollars, or about $6,008 per family. Interest alone on the national debt amounts to $144 annually per family, reports the Chamber of Commerce of the U. S.

IN THE NATION'S CAPITAL

(Continued from page 31)

"general economic, political, racial, religious, social, or similar clauses."

To prevent the annual reappearance of proposals which fail to win significant support, SEC ruled that a proposal may be omitted for three years if it has received less than 3 per cent of the votes at its first submission, less than 6 per cent at a second submission, and less than 10 per cent at a third.

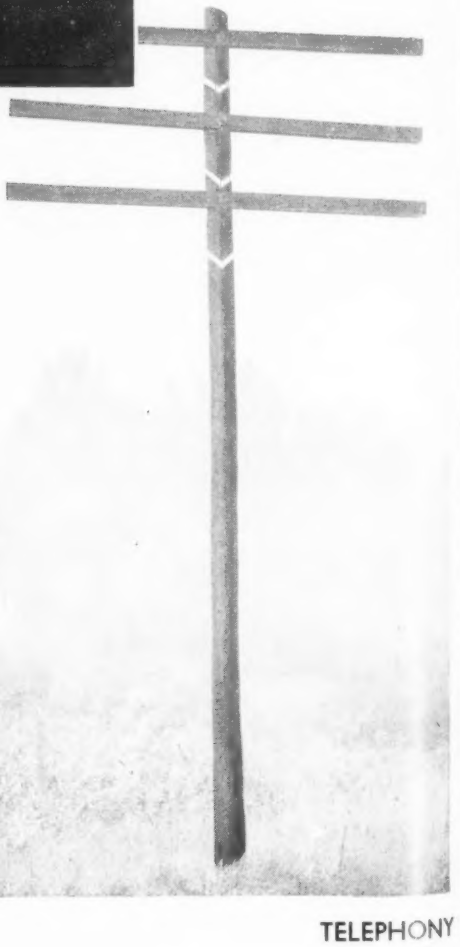
A Flurry of Rate Cases

The two weeks' period covering the end of the old year and the beginning of the new, brought news of considerable telephone rate activities, especially among Bell System companies. The biggest case, of course—one which is likely to go on for months and months—was the opening of the $68,850,000 rate increase petition of the New York Telephone Co. This request for a 10 per cent increase is said to be the largest rate case in the history of the New York Public Service Commission. It may even be the largest single company rate case before any utility commission. Seven cities, including New York City, appeared in opposition before the hearings, which began in Albany last week, before Commissioner Eddy. Some of the hearings may be held in New York City.

During the first week of the new year, the Massachusetts commission allowed the New England Telephone & Telegraph Co. a 3 million dollar increase in revenues. Adding this to a $4,500,000 increase granted last September, it still leaves the company short on its original petition for $10,225,000 in that case. The telephone company, however, is now collecting the higher rate under bond, pending a decision by the Massachusetts Supreme Judicial Court. A refund will be in order if the court should finally decide that the company is entitled to less than $10,225,000. Because of an earlier decision by this court (in another utility company rate case), observers are watching what the Massachusetts court does with the New England Telephone & Telegraph Case with much interest.

In another New England state, the same telephone company was allowed an increase of $800,000 a year on Jan. 6 by the New Hampshire Public Utilities Commission. This order will probably not be appealed because it is the result of a settlement. The final figure was $200,000 less than the amount originally requested by the company.

CONTINUAL RESEARCH MAKES TAYLOR-COLQUITT POLES INCREASINGLY BETTER



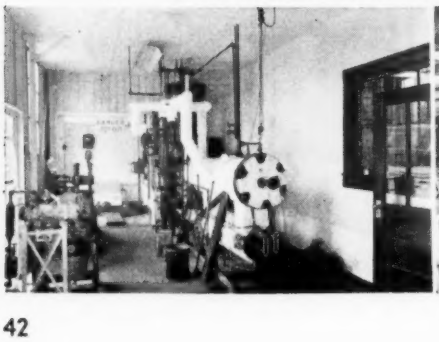
Below are shown two pilot treating cylinders in the Taylor-Colquitt research laboratory. One is six while the other is 26 feet long.

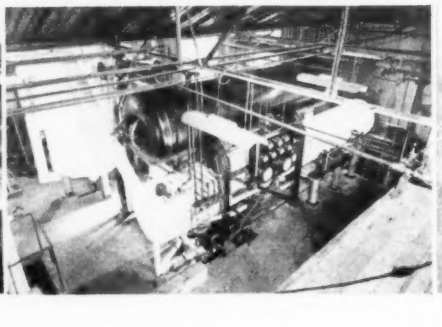
Manned by graduate technologists, these cylinders in conjunction with a large amount of special laboratory apparatus, are used not only to aid in the control of Taylor-Colquitt production operations but also to develop new and better wood preserving techniques.

Continual research with this equipment means increasingly better products—increasingly greater values for the ever growing list of telephone companies that specify Taylor-Colquitt poles.

Taylor-Colquitt poles are distributed to independent telephone companies exclusively by Automatic Electric Sales Corporation, 1033 West Van Buren Street, Chicago 7, Ill.

TAYLOR-COLQUITT CO.
SPARTANBURG, SOUTH CAROLINA
PLANTS AT SPARTANBURG, SOUTH CAROLINA AND WILMINGTON, NORTH CAROLINA





An interesting development comes out of Utah in a rate case involving the Mountain States Telephone & Telegraph Co. This case was ruled on during this same very active fortnight. The Utah commission on Dec. 29 authorized the Mountain States company to increase rates by approximately $1,678,852 in annual gross revenue. The company's petition requested the commission to determine the dollar amount of net earnings which would produce a fair, reasonable, and adequate rate of return. The commission decided to compute the return at 6.50 per cent on a net investment rate base, which with operating earnings, was projected forward to Dec. 31, 1953.

The 6.50 figure was used to give recognition to "attrition" (loss due to the time lag in rate proceedings). The commission stated: "By such procedure we believe the company should be able to earn the rate of return (approximately 6 per cent) hereinabove found to be just and reasonable. It is to be strictly understood that, in using a rate of 6.50 per cent at this time, we do not find that the company is entitled to earnings of that magnitude." The commission excluded from the rate base, telephone plant under construction and an allowance for cash working capital.

In neighboring Nevada, the state public service commission approved the Bell Telephone Co. of Nevada's request for an additional $256,000 yearly. However, the commission ordered at the same time, that if the federal income tax on corporations is reduced from 52 per cent, the telephone company must pass along the savings in rate reductions to its customers. The utility company had asked for a rate of return on its investment of 7½ per cent. But the commission cut this to 6.3 per cent, which it "considered fair to the consumer and fair to the company."

The Nevada commission made one interesting comment in reply to the company's suggestion that it needed a higher rate of return in order to attract investment. The commission said: "Until the Bell Telephone Co. of Nevada becomes completely autonomous, its ability to attract money for development need not be considered . . . the ability of the Bell of Nevada to obtain money for plant extension is a problem of the parent company."

In North Dakota, by a 2-to-1 decision, the public service commission granted Northwestern Bell a 16.4 per cent increase for that state effective Jan. 4. The increases are calculated to yield an increase in gross revenues of $892,000 gross and $411,000 net on the North Dakota operations. The commission used a 6¼ per cent return on investment in the state, as against a 7½ per cent return urged by the company. The dissenting commissioner thought that the increase allowed was too high.

The Mountain States Telephone & Telegraph Co. has two interesting court appeals on the fire. The Idaho Supreme Court was to hear arguments Jan. 18 on an appeal from a lower court injunction, permitting a 2 million dollar rate increase which the state commission did not want to allow. Over in Montana, the attorney general is trying to convince the courts that he has a right to take an appeal from a telephone rate increase which the state commission *did* allow. One state court has already ruled that the attorney general is not the proper party to bring such a suit.

V V

OBITUARIES

KEMP HAYTHORNE, 55, manager of new products sales for the electrical wire and cable department of United States Rubber Co., died suddenly on Dec. 27 in New York City.

Mr. Haythorne, a native of Chicago, had been associated with the rubber company since 1919. He was a sales agent in the Texas area for many years and later moved to New York City where he was employed in the company's wire and cable sales department for the last 12 years.

He served as an officer in the United States Navy during World War I. He is survived by his widow, Marietta.

* * *

CLARK L. INGHAM, 90, organizer and first board chairman of the old Frontier Telephone Co. (the first to install dial telephones in Buffalo, N. Y.), died on Jan. 7.

For many years, Mr. Ingham was a prominent business figure in Buffalo, his home town; and took an active part in early development of the city.

* * *

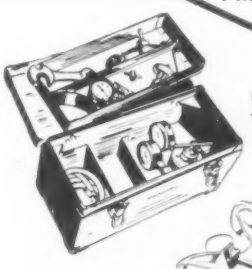
HOMER ANDERSON, 51, manager for 15 years, of the Auburn, Adairville and Lewisburg, Ky., offices of the Southern Continental Telephone Co., Cookeville, Tenn., died recently at his home in Auburn, Ky., following an illness of several months.

Mr. Anderson, a native of De Kalb County in Tennessee, was at one time manager of the Alexandria (Tenn.) Home Telephone Co.

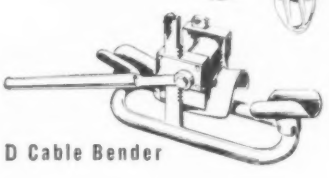
He is survived by his widow, Mrs. Lillie Davis Anderson; a son, Shelton Anderson of Auburn, Ky.; his mother, Mrs. Eliza Anderson; five sisters, Mrs.

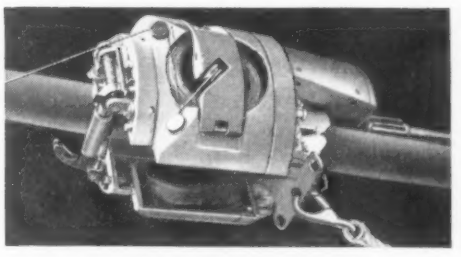
GENERAL MACHINE PRODUCTS COMPANY, INC.
7th & Wood Sts.
Philadelphia 6, Pa.

Aerial Tents
Cable Benders
Cable Blocks
Cable Lashers
Coaxial Cable Tools
Lashing Wire Clamps
Portable & Power Reels


Pressure Testing Kit

C R Power Reel


D Cable Bender


B, C, D & E Cable Lashers

Special Purpose Tools To Specifications
Literature on Request

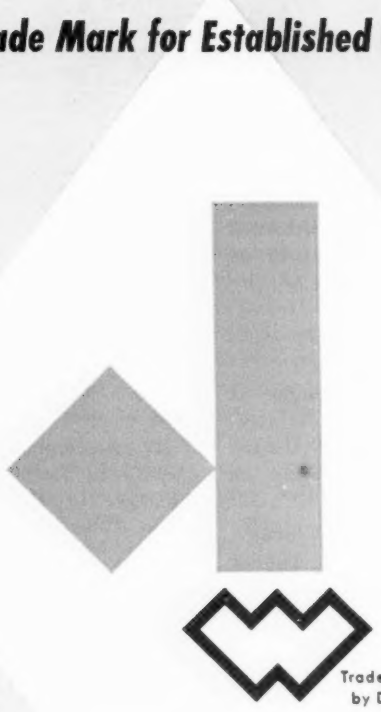
Over 250 various items of Line Construction Tools, Maintenance & Pressure-Testing Equipment in stock for immediate Shipment

SPECIALIZED COMMUNICATIONS EQUIPMENT SINCE 1918

GMPCO

Red-"d" for Action!

A New Trade Mark for Established Quality Wire



Trade Mark Reg., Copyright 1953 by Diamond Wire & Cable Co.

Look for the Red-"d" when you're looking for action. You'll soon find this new trade mark on all Diamond Telephone Wire. Diamond Wire and Cable Company, long recognized as a leading manufacturer of quality telephone wire, gives your telephone supply jobber fast service to meet your installation schedules. We're Red-"d" to serve you with the best... through your telephone supply jobber.

Trade Mark

DIAMOND WIRE & CABLE CO.
SYCAMORE, ILLINOIS
Manufacturers of Red-"d" Electrical Wire

Vela Griffith, Mrs. Elroy Floyd, Mrs. Claude Roberts, all of Watertown, Tenn.; Mrs. Preston Huffman of Alexandria, Tenn.; and Mrs. Phil Walker of Carriere, Miss.; two brothers, Hobert Anderson of Watertown, and the Rev. James Anderson of Vacaville, Calif.

THE OPERATOR'S CORNER

(Concluded from page 26)

sens, our mind must slow down correspondingly. It shouldn't, unless we beg it to.

In his book, "Th Years After Fifty," Dr. Wingate M. Johnson declares, "The mind should be at its very best when one is 40 and should continue to be a first-class thinking machine until the proverbial threescore years and 10." Dr. Howard W. Haggard says, "The faculties of the mind may stay young, keen and clear even into the 90's." Again, this statement is borne out in the life of my great aunt who lived to be 97 and worked in her greenhouse until a week before her death. Her grandson told me, "If you break as much as one plant in the greenhouse, grandma will see it."

If you are one of the so-called "older girls" in your office, this information should be most encouraging. If you are 40, you are just beginning to live. If you are 50, you're 15 years younger and, if you have reached the age of 60, you can be just as smart as you ever were and just as mentally alert, if you desire to be.

A healthy operating force is a definite asset in any telephone exchange since absenteeism cripples the service and places a burden upon operators who are on the job. By keeping in good physical condition, maintaining a happy outlook on life, free from worry, we can do a better job and enjoy life to the fullest extent.

Traffic Questions

(1) Is an intercepted local call from a postpayment coin line chargeable?

(2) If a call from a postpayment coin line on a local call is affected by a momentary cut-off, should the interruption to conversation be disregarded in timing the call?

(3) When an operator observes that the initial period has expired on an A board to call from a postpayment coin line, what action should be taken by the operator?

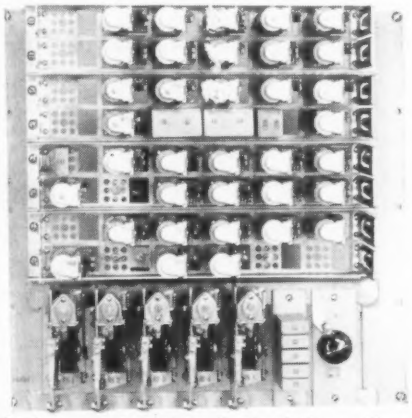
(4) To what does the term "cut-off" apply as used in the Toll Operating Practice when establishing precedence?

(5) What information is included in leaving word on a long distance call?

Answers are presented on page 51.

NEWS on NEW PRODUCTS

LINE INSULATION ROUTINER—A product of Automatic Electric Co., the Automatic line insulation routiner is a device for automatically testing subscribers' lines in Strowger automatic exchanges for line insulation faults found in outside exchange plant. The three tests which the routiner makes will detect insulation faults which show up in leaks across lines, between lines, or from lines to ground—whether these faults appear in cable, open wire, or subscribers' drops.



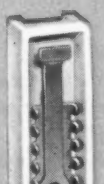
Switchroom equipment for line insulation routiner.

The routiner is completely automatic in operation, requiring manual attention only for setting, starting, and restarting after it has found a faulty line. In most installations it will test 30 lines per minute. The manufacturer states that this rate will permit most central offices to be completely tested for line insulation faults during a short period of high humidity (early morning, for instance)—a highly desirable situation, since the routine will disclose an incipient fault (due to broken cable sheath, etc.) even though the short time the insulation is exposed to dampness may not allow the fault to become serious enough to interfere with service.

The minimum leakage resistances to be detected can be selected in steps of 20,000 ohms from 100,000 ohms downward by setting a switch key. When a leak which falls below the pre-selected minimum resistance value is located, the routiner stops. Lights indicate on which line the equipment has stopped, and one of the "fault lights" indicates the nature of the fault.

The routiner is assembled in two units—the test board equipment, and the switchroom equipment. Three optional mountings are available for the test board equipment. It can be mounted with an existing test panel, in a turret on top of the test desk, or

Featuring the Type 70 DOLLAR-SAVER Discharge Block



Type 18 will save you many costly service trips! Its self-clearing Type 70 "DOLLAR-SAVER" Discharge Blocks ground to drain lightning and power surges, then reset themselves instantly . . . minimize costly replacements. Seamless aluminum cover can't rust, won't let water in to cause trouble. Roomy interior allows easy replacement of 7-ampere fuses. UL-listed, tested. Order Catalog No. SB-18.

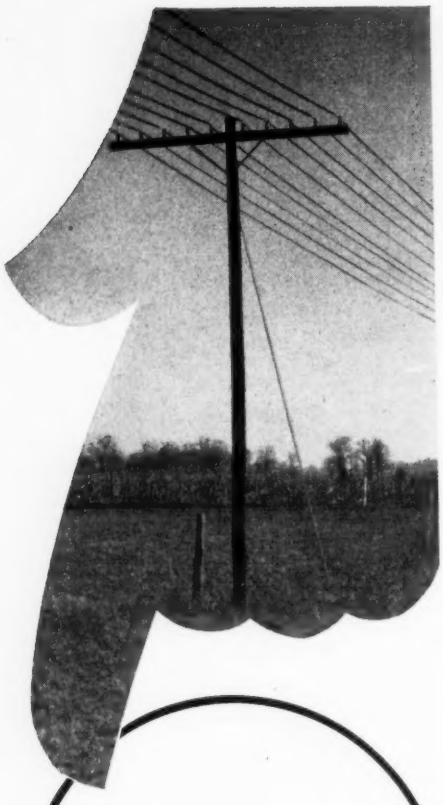
Size	Shipping Wt.	Gap
2¾x7½x2¾"	2¼ lbs.	0.003"

Get the facts on Type 18 and our full line of trouble-eliminating protective equipment. Write for new catalog 4068-B today!

Products of the telephone specialty department of

AUTOMATIC ELECTRIC

Distributors in U. S. and Possessions: AUTOMATIC ELECTRIC SALES CORPORATION
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.



Crapo
HTL-135
INDIANA STEEL & WIRE CO.
MUNCIE, INDIANA U. S. A.

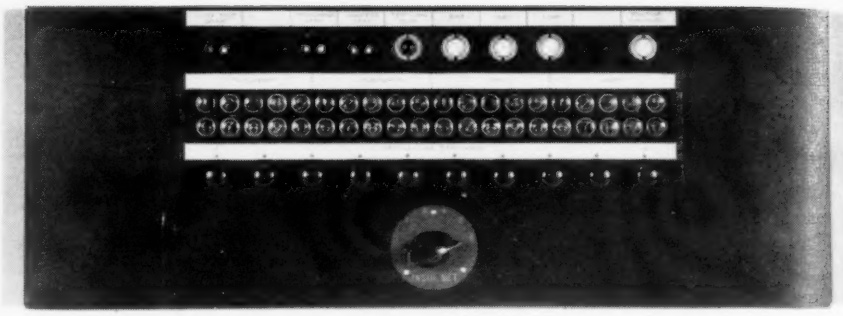
LOWER
Cost Per Mile

● Efficient rural telephone circuits can be built at minimum overall cost where *Crapo* HTL-135 High-Tensile Line Wire is used to full advantage. For *Crapo* HTL-135 makes possible spans up to 350 feet in heavy, 540 feet in medium and 650 feet in light loading districts. Longer spans mean fewer pole structures with substantial savings in material and labor costs per mile.

The rugged tensile strength of *Crapo* HTL-135 and its heavy galvanized coating provide dependable and economical service life on typical rural lines.

Ask your jobber for details or write direct for engineering data!

INDIANA
STEEL & WIRE COMPANY
Muncie, Indiana



Test board equipment for Automatic line insulation routiner.

it can be located on the same relay rack as the equipment for the switchroom. (The latter mounting is available only for 19½-inch racks). The test distributor connecting unit and the relay equipment unit, which together make up the switchroom equipment, are available for mounting on either 29-inch or 19½-inch racks.

The equipment is for operation with 100-line, two-digit test connectors, and will operate with the test distributors most commonly used. Special adapting equipment is available for 200-line or three-digit test connectors and other test distributors. Request NP 229.

• • •

HAND BLOW TORCH—Introduction of a new LP (Liquefied Petroleum) hand model blow torch with disposable fuel tank has been announced by The Turner Brass Works. Complete with all-brass burner and fittings, it is designed for soldering, light brazing, similar job and shop use where heavy duty equipment is not required.

No filling is necessary, because the entire fuel tank is replaced by a refill unit as needed. Special features include factory-set pressure relief valve, wide-range positive-control flame adjustment, ICC approved heavy-gauge large-diameter tank for greater stability and easier handling. Compact in size (tank measures 2⅞ inches diameter x 9 9/16 inches high), the torch is especially handy because it fits conveniently in tool box or pocket.

Special accessories to broaden the work range are also available, including

a heavy-duty burner, pointed soldering tip, chisel point soldering tip, and flame spreader. Request NP 230.

• • •

TAPER FOR ELECTRICAL CONNECTIONS—A taper technique that eliminates terminal screws or soldering in electrical circuits has been developed

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

NP229____; NP230____; NP231____; NP232____.

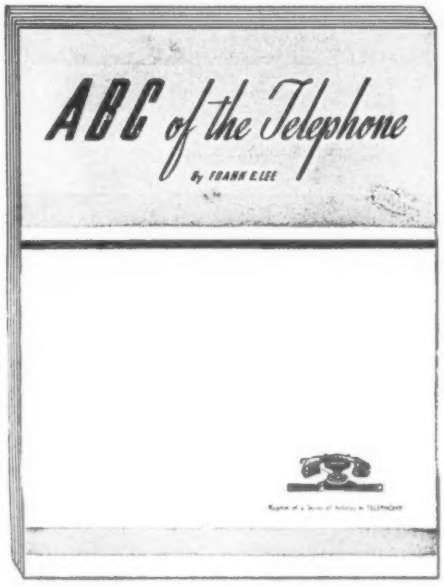
Name.....Title.....

Company.....

Town and State.....

1/16/54

Volumes I & II of
"ABC OF THE TELEPHONE"
Now Available
Both Written in the Telephone Man's Language



Volume I is an 84-page booklet of 21 installments of the popular series by Frank E. Lee, appearing currently in TELEPHONY. Includes circuits, transmitters, receivers, induction coils, generators, ringers, relays, line protection, dials, automatic switching, principles of protection, drop wire installations.

Volume II is an 80-page booklet of 20 installments. Covers installation and maintenance of Sub-Station Protectors, Station Wire Installation, Subscriber Installation, Fault Locating, Relay Circuit Analysis, Planned Maintenance Program, Electronic Testing of Aerial Cable and Drop Wire, Plant, Transmission Developments and Loading Coil Theory.

Over 17,000 copies of the two volumes have been sold domestically and abroad.

Either volume can be bought separately. We suggest, however, that you combine your requirements for both and take advantage of the following lower quantity prices.

Single Copy	**$1.50 Each**
2 to 25 Copies	**1.35 Each**
26 to 50 Copies	**1.20 Each**
More than 50 Copies	**1.05 Each**

To facilitate handling the large volume of requests for ABC booklets, TELEPHONY has arranged for all orders, remittances and inquiries to be sent directly to Mr. Lee, the Publisher. For your convenience use coupon below.

FRANK E. LEE, Publisher
1751—183rd ST., HOMEWOOD, ILL.
Please send the following:

_____ Copies of ABC, Vol. I
_____ Copies of ABC, Vol. II

NAME _____
COMPANY _____
STREET _____
CITY _____

Start the New Year
right
with
delight
by
transferring your
engineering
and
construction
problems
to
our engineering
staffs and
construction crews

—

It doesn't cost—
It pays you
to avail yourselves
of our
services

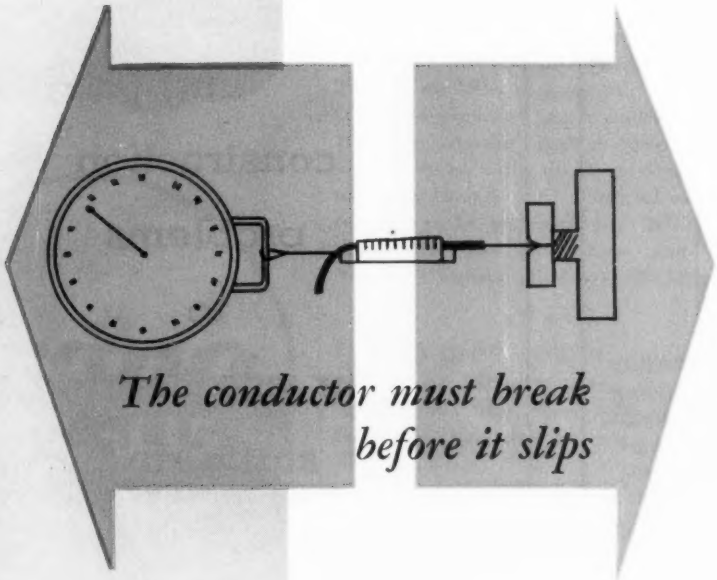
—

GUSTAV HIRSCH ORGANIZATION, INC.

1347 West 5th Avenue
Tel. KI-0611
Columbus (12) Ohio

ALPHADUCT

P clamp adhesion test



The conductor must break before it slips

P clamps are the most widely used method of attaching drop wire to buildings. Lest you may worry about a P clamp causing slipping of the insulation or jacket on Alphaduct Neoprene Jacketed Drop Wire — read about this Alphaduct service test. This test is made daily.

A sample of Alphaduct wire is inserted in a P clamp with 12 inches of the wire projecting from the top of the clamp. The bail of the clamp is then inserted in the upper jaws of a tensile testing machine, and the end of the wire is stripped free of jacket and insulation and inserted in the other end of the machine.

The jaws of the machine are then gradually separated until the conductor breaks. The conductor must break before there is ANY slipping of either the jacket or the insulation.

Don't have any worries about a little old P clamp hurting ALPHADUCT drop wire. Try Alphaduct. It's dated by a color coded thread so you can see for yourself how long it lasts, how much money it saves.

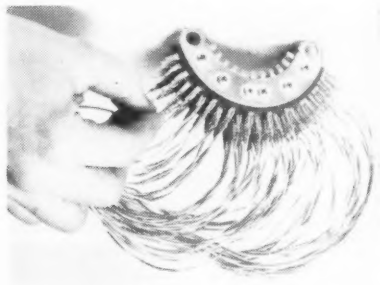
ALPHADUCT WIRE AND CABLE COMPANY • MILLTOWN, NEW JERSEY

NATIONAL DISTRIBUTORS • LEICH SALES CORPORATION, CHICAGO, ILLINOIS

REGIONAL DISTRIBUTORS • PANKEY SUPPLY CO., CHARLOTTESVILLE, VA.

THE LINDSAY TELEPHONE SUPPLY CO., CLEVELAND, OHIO

by Aircraft-Marine Products, Inc. Both self-locking terminals, the taper pin with mating receptacle and the flat taper tab and taper tab receptacle were designed primarily for the electronics and communications fields where many connections have to be made and space is limited. The taper pins are almost



as small as the wire itself (only a few thousandths of an inch thicker than the insulated diameter of the wire) which permits very close spacing of termination without the danger of short circuits.

Typical taper pin and tab applications are in telephone mainframes, stepping switches and relays, outdoor cable terminals and plug-in lightning arrestors. The extreme security against vibration led to their use as crowded multiple contact "AN" connectors in aircraft. Low cost and high application speed make the tapers valuable for use as antenna and speaker disconnects and as connectors for I. F. transformer tabs. Switches on electrical clocks and timers may be equipped with taper tabs for connection to radios.

In the electrical computer and business machine field, taper pins are standard among the largest producers of permanent wiring for terminal blocks. Taper tab connectors are used on close spaced relays, switch, and socket tabs.

Production and servicing of military field telephone and radio equipment is facilitated by use of taper pins and tabs for connector plugs, microphone and head set switches and tinsel type telephone cords.

Automatic application of the AMP terminals to wire, cuts the preparation time to a minimum. The terminals are tandem mounted in strip form and wound in convenient reels for automatic application to wire. An AMP automatic terminator (use of this machine is covered in the purchase price of the terminals) produces a carefully controlled precision crimp with remarkable uniformity over long production runs.

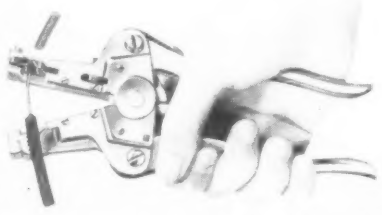
The amount of time saved, combined with the relatively little effort involved in installation, is a big factor in favor

of the AMP taper terminals, the company states. The previous soldering method, used on a Remington Rand electronic device, took 100 hours of tedious labor. When taper tabs and receptacles were installed, there was a 20:1 reduction in time and cost of application. Request NP 231.

• • •

HAND WIRE STRIPPER—A completely automatic wire stripper that eliminates triggers, cocking or other holding devices is being introduced by Holub Industries, Inc. It is called the "Hi-Speed" wire stripper.

The "Hi-Speed" is designed to strip all kinds of building and fixture wire with a single squeeze of the handles.



After the wire is stripped, a concealed cam holds the jaws open until the wire is removed. This prevents the jaws from snapping back and crushing the wire, particularly stranded and fine solid wire, the company states.

All parts are sturdily constructed, including the handles which are formed steel. The handles are smooth and narrow for an easy, non-tiring grip. Steel cutting blades are hardened and ground to a razor sharp edge. The upper half of the blade is rigid, while the lower half moves up and down in a precision milled slot. "V" notches assure perfect matching of stripping blades and prevent cutting or scoring of wire, it is reported.

A blade adjustment screw increases the wire range of each stripper and compensates for variations in insulation thickness and adhesive properties.

The "Hi-Speed" Stripper is made in seven sizes for stripping Nos. 8 to 30 solid and stranded wires; also POSJ, parallel wire and 309-ohm flat twin lead-in wire. An adjustable stop is furnished with each tool. Request NP 232.

• • •

River Spanned by 661-foot Span of Plastic Cable

One of the most interesting cable installations was recently accomplished by Northern Ohio Telephone Co., Bellevue, O., construction forces in spanning the Maumee River at Grand Rapids, O. The distance across the river at this point is 661 feet, and the crossing was made with one long span of 101-pair plastic covered cable. The cable is supported by a 7/16 inch steel strand and is 35 feet above the river at the lowest point. To prevent the cable from oscillating and thereby causing excessive wear, two "dampers" were installed on the long span.

The cable serves as a link to connect the more than 500 subscribers who live on opposite sides of the river. For almost a year construction forces have been working on a complete rehabilitation of the Grand Rapids exchange, preparing for conversion to dial service which is scheduled for the second quarter of 1954.

Cost of this project is given as more than $200,000. Ninety-two per cent of the Northern Ohio company's telephones are now dial operated.

V V

"[Thomas Alva Edison is] a symbol of free enterprise. Unhampered by 'all-wise planners,' of which we have seen too many in recent years, Edison perfected his inventions and put them into production without the approval of government planners. His experiments were carried out in a free economy for the benefit of humanity."—GEORGE E. STRINGFELLOW, *senior vice president, Thomas A. Edison, Inc.*

When a lineman's fingers are stiff with cold, there's nothing so welcome as an easy-working, quick-warming heater. It starts him working sooner, and saves you man-hours! Mutual Propane Portable Heaters are safe; there's no smoke or gas fumes, no dangerous liquids to spill. They're easy to use, too! Just turn the valve and light a match. No pumping or priming, no clogged burners to clean. Gas cylinder lasts up to 1,000 hours. Thousands report satisfaction. Only $23.00 for heater S-5395; $21.30 for No. 6 Cylinder S-5376, f.o.b. Chicago. Order today!

Buy Automatic's APPROVED Supplies
Highest Quality
Biggest Line
Fastest Service

Recommended and sold through our distributors

AUTOMATIC ELECTRIC

Distributors in U. S. and Possessions: AUTOMATIC ELECTRIC SALES CORPORATION
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

Attending the L. M. Berry & Co. managers conference were left to right: JOHN W. BERRY (general sales manager); W. A. STEUER (general manager); E. F. TINNERMAN (Wisconsin division manager); S. H. RAINEY (Southern sales supervisor); M. F. FEENEY (Kentucky division manager); N. E. ROBINSON (Ohio division manager); I. J. KLASS (western manager); J. E. WHALEN (Wisconsin division supervisor); B. D. ADDINGTON (mid-eastern division manager); J. D. BECKHAM (Mississippi division manager); RALPH MANER (Florida division manager); L. E. GETZLER (New York division manager); K. R. JEFFERS (western division manager); J. J. MULLIN (special representative); W. C. WELCH (Louisiana division assistant); WILLIAM MAIER JR. (Tennessee division assistant); J. C. GRIMES (Ohio division assistant); PHIL ENGLE (general art director); H. C. EVANS (mid-western division manager); J. M. BAYLEY (Alabama division manager); ED BRUNDAGE JR. (Pennsylvania division manager); J. R. THOMPSON (Tennessee division manager); H. F. SCOTT (mid-western manager); W. L. WOLCOTT (personnel & training director); J. W. CRAIG JR. (general sales supervisor); R. W. BRUNDIGE (sales promotion manager); H. L. BOEBEL (general sales assistant); J. P. WHITE (southern manager); J. Z. WILSON eastern sales manager); W. J. McGIRL (Louisiana division manager); F. L. HAWKER (eastern manager); LOREN M. BERRY and H. C. HULL (statistician).

L. M. Berry Holds Division Managers Conference

Highlighting the three-day division managers conference of L. M. Berry & Co., held in Dayton, O., on Dec. 7, 8 and 9, was the announcement of the promotion and theme for 1954, "Ideas will score in '54."

On the opening day of the conference, John W. Berry disclosed the purpose and theme of the conference, and pointed out that "ideas" would be the most powerful force in selling for the company in 1954. He stressed that the program adopted by the company should be supported by sound business practices and that its aim always should be the promotion of good public relations between telephone companies and their subscribers.

Ways of doing a better job for Independent and Bell telephone companies, whose directory work the company handled, and ways of furthering the company's objective in promoting and maintaining good public relations and subscriber good-will for telephone company customers were discussed and emphasized.

The company's growth and progress was reviewed by Mr. Berry. Seventy-seven new directories had been added during the year, which now brings the number of directories handled by the company, to over 900. These directories represent over 222 Independent and Bell telephone companies in 29 different states, Mr. Berry stated.

Another good year for business in 1954 was predicted not only by Mr. Berry, but by many outstanding leaders in business and industry who had sent in special messages to be read at the conference.

A new sales incentive program for 1954, called "CLUB fifty-FORE," was announced to the group. This program will award merchandise prizes to all sales personnel meeting objectives on new and increased business in 1954.

This three-day conclave also included discussions on personnel, training, management, supervision, and sales promotion. Skits, slides, charts, panels, question and answer periods, and gimmicks made the meeting varied and interesting. It was by far one of the best conferences ever held in the 43-year history of the company, according to Mr. Berry.

This conference will be followed by other meetings for all supervisors, which will be held in each division.

V V

"Nowhere in the world do the people and the press enjoy so much freedom and have so many privileges as in the United States. Much of the freedom that we have, and should hold dear, is due to our newspapers. For, as the great political philosopher, Thomas Jefferson, said, 'Our liberty depends on the freedom of the Press, and that cannot be limited without being lost.' "—Pawhuska (Okla.) *News*.

Display depicting L. M. Berry Co.'s 1954 managers' conference theme "Ideas will Score in '54!"

CAN DO

Any Kind of Outside Plant Job

Whether it's new construction, regular maintenance, or emergency repair, call Neale and get a crew of high skilled men who work with the most modern equipment. Your outside plant will operate more efficiently and last longer. Estimates made without obligation.

NEALE CONSTRUCTION CO.
ENGINEERING • CONSTRUCTION • MAINTENANCE
TOPEKA, KANSAS PHONE 4-2621

New!

Developed by independent telephone engineers specially for small and medium companies . . .

hook-switch HOWLER

Solves improper subscriber-disconnects from Central Office. Will quickly (often within a month) pay for itself. The line is automatically clear when subscriber hangs up. Uses standard telephone DC voltages. Simple to use. Portable. 10 year life.

Order one now—end your troubles.

TELE-SYSTEMS, INC.
6442 Santa Monica Blvd.
Los Angeles 38, Calif.

Curtis Retires; Jones Succeeds Him for Copperweld

The wire and cable division of Copperweld Steel Co., Glassport, Pa., has announced the retirement of V. K. Curtis from active duty. Mr. Curtis has been district manager in western Pennsylvania, West Virginia and parts of

V. K. CURTIS

Ohio and Kentucky, and is well known throughout his territory and the Independent telephone industry nationally.

Succeeding Mr. Curtis is Donald T. Jones, who is back with Copperweld after two years of service as a lieutenant with the United States Navy in the Philippines. Prior to that, he was Copperweld's sales engineer in Michigan and Indiana.

He is a graduate of Iowa State College, school of electrical engineering.

Answers to Traffic Questions On Page 44

(1) Such a call is not chargeable unless subsequent events lead to its completion.

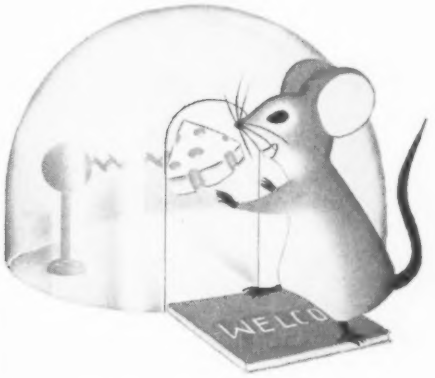
(2) Yes.

(3) The operator should cut in and say for example, "Your five minutes are up," or "You've talked five minutes," adding, "Signal when through, please."

(4) The term "cut-off" applies to restoring a connection between (a) telephones and (b) your office and a distant office.

(5) In leaving word, the calling number is always included and also the calling name or extension number, or both, if volunteered by the calling party.

We've Built a Better Mousetrap



FLOTROL

THE BATTERY CHARGER WITH NO MOVING PARTS *

Model 1200B

And telephone men are beating a path to our door.

They've found that FLOTROL does what they always hoped their battery charger really would do; IT HOLDS CONSTANT FLOATING VOLTAGE on the battery.

They've found, too, what it can mean to have a charger which doesn't require attention, one they can depend on to do its job, year in and year out, without costly and annoying routine maintenance or adjustment.

For complete information, write for Bulletin 160, which describes the single-phase models, from 1/2 ampere to 24 amperes, and Bulletin 161 which covers three-phase models from 25 amperes to 200 amperes.

** No good on mice.*

LORAIN PRODUCTS CORPORATION
1122 F STREET LORAIN, OHIO

FLOTROL PARTNERS IN DEPENDABILITY SUB-CYCLE

CLASSIFIED SECTION

Rates 15 cents per word payable in advance. Minimum charge $3.00 for 20 words or less. Classified advertisements must reach us 8 days before publication date.

FOR SALE

RECONDITIONED
FEDERAL #804A

Magneto Compact set convertible to desk or wall.
Equipped with capsule type transmitter and receiver. Can be used on long rural lines.
PRICE $19.50 EACH

RECONDITIONED
LEICH #605

Common battery desk or wall set. W.E. Transmitter & Receiver units.
Equipped with st. line or harmonic ringers.
PRICE $14.50 EACH

WITH DIAL ADD $4.00 EACH

Terms 2%—10 Days Net: 30

BOHNSACK EQUIPMENT CO.
GERMANTOWN, NEW YORK

SIX POSITION MANUAL TOLL BOARD, Automatic Electric 63 Cord Circuits sleeve sup. Wired 20 equip. 15 C.B. or L.C. trunks. Wired 60 equip. 50 toll trunks. 50 R U Trunks, 8 info. trunks. One Calculagraph—wind, two elect. Calculagraphs. Ringing frequency buttons ca. pos. Also Harmonic Converter—two sets 5 frequency, two Interrupters, two busy tones, two dial tones. One Reed type—Frequency Meter. Write Commonwealth Telephone Company of Ohio, Athens, Ohio.

FOR SALE

MAGNETO EXCHANGE located in northwestern central Wisconsin — 450 stations, 60 common battery, rest magneto. Large expansion potential. Annual gross rental revenue $15,200. Write Box No. 3437, c/o TELEPHONY.

STUCCO MOTOR COURT 23 UNITS; two rent houses, one apartment house, eight room air-conditioned residence. All built on 9¼ acres, Highway 59, Wharton, Texas. Real opportunity for retired telephone man. Write Box 846, Wharton, Tex.

ONE LENGTH 2,000 FEET W. E. LEAD COVERED CABLE, pressurized 52 quad. 19 ga. pl. Net weight 6,830. Has never been used. Price—$1,675 FOB. Write Prescott Telephone Co., Box 58, Prescott, Wash.

FOR SALE

GN38 GENERATOR
Used on Switchboard BD70
BD71
BD72
Also used on FIELD Phones EE8
1000 BRAND NEW at $4.00 EA.

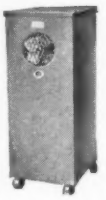
TALLEN CO., INC.
159 Carlton Ave. Brooklyn 5, N. Y.

FOR SALE

NEW SCRU-TITE ANCHORS

will anchor any material to any solid surface with little effort & Life time durability. Sizes 6 to 32.
FREE samples on request.

MASTERCRAFT PLASTICS CO. INC.
95-01 150th St. Jamaica 25, N. Y.



ALL SEASON DEHUMIDIFIERS

All temperature, air filtering, humidistat controlled type made in several sizes for unheated dial exchanges in all climates.
Order from jobber or direct.

THE H. J. KAUFMAN CO.
13215 Roselawn Ave., Detroit 38, Mich.

WANTED TO BUY

INTERESTED IN PURCHASING TELEPHONE PROPERTIES IN MIDWEST AND SOUTH, over 200 subscribers. Universal Telephone & Telegraph Corp., Box 5386, Indianapolis 5, Ind.

Old, established, nationally known company interested in the purchase of Patents, New Products or Companies that have an applicaton in the telephone field.

CONTACT
BOX NO. 3013, c/o TELEPHONY

HELP WANTED

CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 6100 N. 20th. Philadelphia, Pa.

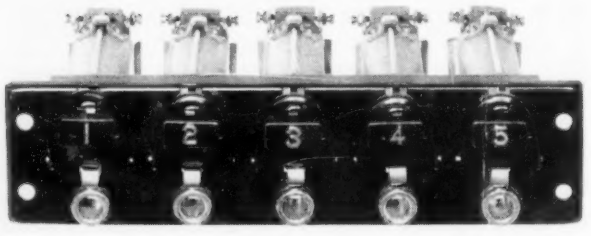
ACCOUNTANT FOR EXPANDING TENNESSEE TELEPHONE CO-OPERATIVE. Applicant must qualify for development into head of accounting department. Reply should include references, present wages and be directed to Twin Lakes Telephone Co-operative, Gainesboro, Tenn.

SALESMEN

Experienced in Telephone Supplies, Automatic Switchboards and Equipment. Company car furnished, salary, expenses. Territories open—North Carolina, Virginia, Wisconsin, North Dakota, South Dakota.

Write Box No. 3439, c/o TELEPHONY

COMBINED JACKS & SIGNALS



Western Electric #22-C type on #89-B Mounting (5 per strip) *BRAND NEW*

•

BUCKEYE TELEPHONE & SUPPLY CO.
1250 KINNEAR ROAD COLUMBUS 21, OHIO
Kingswood 0655